THE

CHICAGO MEDICAL

JOURNAL & EXAMINER.

VOL. XLI.—SEPTEMBER, 1880.—No. 3.

Original Communications.

ARTICLE I.

ATRESIA OF THE GENITAL PASSAGES OF WOMEN. A paper read before the Chicago Medical Society, July 19th, 1880. By EDWARD W. JENKS, M.D., LL.D., Professor of Medical and Surgical Diseases of Women and Clinical Gynecology in Chicago Medical College.

"Les examples persuadent bien mieux que les simples raissonnements, et l'experience donne la perfection à tous les arts."—Mauriceau.

Definition.—The term atresia, of Greek derivation (ἀ privative and τρῆσις, perforation) and meaning in its literal sense an imperforate condition or entire absence of a canal or orifice, is by custom or conventionally used more liberally; thus, atresia is the term sometimes made use of to designate partial obliteration of a canal, *e. g.*, atresia vaginæ, meaning literally an absence or entire obliteration of the vagina, but custom allows this term to be applied to a condition of the vagina where even the principal part of that passage is perforate, if only a little of it be imperforate. Atresia will therefore be made use of in this paper not in its literal but in its customary or conventional sense.

History.—In reviewing the history of atresia we find earliest mention made of it in the writings of Hippocrates and Aristotle. Hippocrates, in discussing the diseases of women, makes frequent mention of "obstructed uterus" and "closed neck." He uses the terms rather freely, it is true, but in one instance at least there is no doubt that he is dealing with a case of atresia. He says: "After accouchement the genital parts are sometimes closed by adhesions. I have also observed this when the orifice of the genital parts was ulcerated. Phrontis experienced what women suffer in whom the lochial discharge does not take place from this cause, furthermore she suffered pain in the parts, and on touching them observed that there was occlusion; she mentioned this, and upon treatment the lochia made its appearance; the woman was cured and remained fertile." *

Aristotle furnishes us with more precise details. He points out the origin of atresia, whether accidental or congenital, the possibility or impossibility of cure and the accidents which ensue with the arrival of the catamenia. "There are some women in whom from birth the os uteri is somehow closed; in others this is the result of disease; some of these cases are quite remediable, others not at all." Again: "In some women the os uteri is closed from birth up to the time when the menses are established, then with violent pain the os is torn open by the menstrual impulse, but with other women the obstruction must be dissected away by the physician; some women die after the obstruction has been forcibly removed or its attempted removal has failed."

Celsus has surpassed all his predecessors in describing means for overcoming atresia; he recommended first a crucial incision through the membrane and then its entire excision. For dressing he used a kind of tent, for which he substituted later in the treatment a leaden pipe (*fistulam plumbeam*).

Pliny cites the case of Cornelia, the mother of the Gracchi, as furnishing an example of atresia interfering with delivery.

Aëtius classifies atresias, dividing them into three varieties, according to the location of the obstacle: first at the labia, second in the vagina, third at the mouth of the uterus. He also desribes

* Littré's Hippocrates, Paris, 1855–61.

means for overcoming each of these varieties and enters into minute details of the subject.

Such then was the condition of affairs when science sought refuge with the Arabian physicians, and such it remained in their hands. That they did but little to advance the knowledge of this subject is largely due to the character of the Mohammedan laws, which forbade the examination of women by men, and hence the practice of obstetrics and gynecology fell almost entirely into the hands of the midwives. Avicenna, however, classified the varieties of atresia according as they interfered with menstruation or delivery; he also described a method of overcoming atresia by tearing an opening with the finger as well as the older methods of operating with a cutting instrument.

At the end of the fifteenth century Benivieni drew attention to to the first observation of imperforate hymen. In the sixteenth century Wier, Fabricius ab Aquapendente, Cabral and Felix Plater imitated Benivieni by inserting in their works facts which Jean Schenck collected some years later; although they form a compiled work, still the "*Observationes Medicæ Rariores*" is a book of great merit, and it is to be regretted that it was not more frequently consulted; by taking no notice of it many writers condemned themselves to mutual repetitions and barren paraphrases; still facts multiplied and happily observation continued to have its followers. Bauhin, Ruysch and Bartholin made up a contingent that surgeons, and especially *accoucheurs*, ought to extend their knowledge, citing with grateful recollection the names of Guillemeau, Dalechamps, Mauriceau, and Roonhuysen.

Still, notwithstanding the impulses given to the work by these men, progress in this branch of surgery was slow enough, bibliographers displayed no great zeal in research, and the most eminent surgeons were careless of recording success or failure in their operations. This condition only reached an end with the middle of the eighteenth century, and to Heister is due the honor of taking the initiative in the reform which followed. Instead of imitating his predecessors, he collected facts and wrote, so to say, at their diction the two chapters which he devotes to this affection. Following him a host of writers have touched upon the

subject, but they have all been surpassed by Boyer, whose method and perspicuity are inimitable.

Since then the subject has been treated anew, and at greater or less length, but still with a deplorable slothfulness for research. In a subject where personal experience is necessarily limited, and where conclusions cannot have the force of laws unless based upon a considerable number of facts, we are often content with the precepts furnished by learning easy of acquisition, and we believe that our own task is finished when we have gathered together a score of cases, but these are not the means by which we carry conviction, or by which we definitely establish a course of operations both difficult and eminently dangerous.

Nevertheless, if our age has been disdainful of research it has certainly not made sport of such material as has come in its hands —it has been registered by the press, and been given a broad publicity, and it has known how to realize notable progress in an operative point of view; cases reputed hopeless have been attacked with success and bold surgery has reached its utmost limits.

Puech, to whom I am greatly indebted for much pertaining to the history of my subject, is of the opinion that Amussat and Debrou are the two names distinguished above all others among moderns in the treatment of atresia.

Coming down to our own day, and without particularizing individual achievements, we will merely add that the brilliant results which have been achieved in this branch of surgery in our own and other lands are not confined to a limited few; their names are legion, hence a complete modern history of the surgery of atresia would make too lengthy an article, and include a long list of names, many distinguished and some obscure.

Varieties of Atresia.—Of atresia of the generative passages of women we recognize the three following varieties in accordance with their localities: (1) Vulvar, (2) Vaginal and (3) Uterine. Any one of these varieties may be congenital or accidental, also complete or incomplete. The three kinds which have been named may be associated together in one individual, either congenitally or from traumatic causes.

Vulvar Atresia.—(*a.*) The labia majora may be adherent, but on account of their conformation and relative anatomy such adhe-

sions do not prevent the exit of the menstrual blood, but sometimes do interfere with micturition and then calculi are formed, which of themselves require surgical interference.

(*b.*) The adherence of the labia minora like the same condition of the greater lips is usually the result of accident or disease, giving rise to the same difficulties of voiding urine. Unlike adhesions of the labia majora, adhesions of the labia minora may cause retention and accumulation of menstrual blood.

Atresia of both the greater or lesser lips may be consequent upon small pox, measles, or any constitutional or local disorder that can cause inflammation and denudation of their mucous surfaces. Such occurrences are without doubt more common in infancy and childhood.

(c.) Atresia of the hymen is one of the forms included under the heading of vulvar atresia, although not usually so designated, but it is generally spoken of as an imperforate condition. Imperforation of the hymen is of more frequent occurrence than either of the other forms of vulvar atresia. M. Puech*, who has written an excellent monograph on the subject considered in this paper, mentions one hundred and fifty-one cases, of which some were simple and some complicated with atresia in other parts of the genital passages. This author has observed seven cases, and from various sources has collected accounts of one hundred and forty-four others, making the above total of one hundred and fifty-one. He does not include in his list any cases ocurring prior to the age of puberty, and states that if such were to be added, one would be authorized in regarding imperforation of the hymen as an abnormality the most common. Emmet†, with his vast experience, mentions having met with only four cases of retention of the menses due to an imperfect hymen.

II. *Vaginal Atresia.*—This form may be congenital or accidental, as is the case with the other atresias, and also, like them, may be complete or incomplete. Courty‡ and Puech§ recog-

---

* De l'atresia des voies génitales de la femme par Le Dr. Albert Puech in 4° 165 p. Paris, 1864.

† Principles and Practice of Gynecology, by Thomas Addis Emmet. Philadelphia, 1869; page 211.

‡ Courty, Traité Pratique des maladies de l'uterus, des ovaries et des trompes. Paris, 1872.

§ Op. citat, page 11.

nize three varieties of congenital atresia, viz: simple, complicated and complex. They are called simple when the vagina alone is involved; complicated when there is atresia of both the vagina and the neck of the uterus; and complex when the vagina, being double, one of the canals is imperforate. The comparative frequency corresponds to the order in which they are here named, the last one mentioned being extremely rare. Its rarity can be readily inferred from the fact that Rokitansky observed only three cases among sixty-two of congenital vaginal atresia, all of the subjects being adults.

Courty mentions the infrequency of this form of atresia, and states that "none have been observed except by M. Leroy, M. Rokitansky and M. Décés."

There are probably some unrecorded cases, and some that Courty has not heard of. The writer has seen one case in the person of a Polish woman, who came to his clinic to be treated for uterine disease. She was single and twenty-four years of age. I am of the opinion that the adhesion which was in the left vagina might have been from vaginitis, as it was very easily made perforate, after which her double vagina was several times shown to the class, and the atresia examined by touch and by speculum, sometimes through one vagina and sometimes through the other. Some of the peculiarities of this case will be further spoken of when describing the cases which I have tabulated as coming under my own observation.

III. *Uterine Atresia.*—Atresia occurs less frequently in the uterine canal than in any other part of the generative passages. From all published accounts obtainable by Puech, the grand total sums up only fifty-six cases. There is not the least doubt that there have been many cases, recorded and unrecorded, which were unknown to this writer, especially in our own country, where surgical gynecology has had so many valuable contributions.

The same might be said of the statistics of Puech as regards other varieties of atresia already mentioned, and the first thought regarding them might be that they are of but little importance, but, although incomplete, they are none the less valuable as showing the relative frequency of the different varieties of atresia.

Nonat *, in his chapter on "Imperforations, or complete congenital atresia" of the uterus, states that "sometimes there is seen the opening of the mouth of the womb, completely masked by a sort of membranous diaphragm, being a dependence and prolongation of the mucous membrane which covers the lips of the uterine neck. When this membrane is obliterated, the cervical canal is found of the normal caliber."

J. Cloquet † calls attention to this fact, also, by stating that "Ruysch reports the case of a woman in labor three days without advance. The head could be felt in the vagina, covered with a membrane of great density, which closed the vagina. Ruysch incised the hymen, without any result. He then divided the second membrane, which was situated more deeply when the accouchment was rapidly and happily terminated."

The obliterations are, as a rule, limited to the interior portion of the neck. After diligent search I have been unable to find on account of a single instance where there existed an obliteration above the os internum, or even of the entire isthmus.

Atresias are first distinguished according to their location, and secondly all are included under the division of congenital, or accidental. By most writers the congenital are called imperforations, while the accidental cases are termed obliterations.

Etiology and Pathology.—Of the etiology of congenital atresia or imperforation it can only be said that there is arrest of development. The arrest in the complete atresias occurs in the early part of embryonic life. In vaginal atresia it often happens that arrest of development seems to be confined to the canal alone while the other genital organs develop as usual. This arrest of development may be complete or partial and in either instance the vagina fails to become a distensible canal. In some instances there is complete atresia, but the development occurs notwithstanding the existence of imperforation. Under such circumstances by rectal examination the vagina can be felt as a hard fibrous cord. The presence or absence of this cordlike vagina is of major importance as bearing upon prognosis and treatment.

* Nonat, Mal. de L'uterus. Paris, 1869; page 103.
† Dict. des Sciences Médicales. Bruxelles, 1829; art. Imperforation.

The etiology of congenital atresia is explained by Puech and others about as follows:

The female generative organs are developed in three zones. The internal zone has its origin in a blastema lying close to the Wolffian body. The ovaries are developed along its internal border, the Fallopian tubes along its external border, while the uterus is formed where the two borders meet, constituting the "genital cord."

The external zone is developed from a tubercle which makes its appearance at the caudal extremity. This, at first a simple elevation, is bisected by a groove, which deepens until it becomes a *cul-de-sac*, forming the cloaca. As for the tubercle, after dividing, it forms two slight elevations on each side of the groove, the upper two of these uniting above but remaining separate below form the labia majora and the clitoris, while the two inferior elevations develop into the labia majora.

The intermediate zone, from which the vagina is formed, is developed in the blastema, situated between the rectum and the bladder, immediately above the median perineal aponeurosis. This developes into a canal running from the vulvar opening to the neck of the uterus.

In cases of imperforation of the neck of the uterus the origin of the trouble is the same, development having stopped in the internal zone; exception being made in cases where the obstruction is due to a reflection of the mucous membrane of the vagina over the neck of the uterus.

Of accidental atresia or obliteration of the vagina there are pathological causes easily discerned. Injury or disease being the only causes, it simply remains in individual cases to determine the character of the injury or the relationship between obliteration and some co-existing disease. A vagina fully developed may be closed from the adhesion of its walls or its caliber may be diminished, constituting partial obliteration by the reparative process, which succeeds sloughing or true vaginal ulceration. I have myself seen three cases of almost complete vaginal atresia, complicated with vesico-vaginal fistula. There was a very marked similarity in the history of these three cases. In each one the fistula and atresia were in consequence of inflammation

and sloughing following delayed labor and the unskillful delivery of a dead child. Two cases are reported by Courty* of accidental vaginal atresia associated with vesico-vaginal fistula.

Prolonged and difficult labors or the improper use of obstetrical instruments are among the most frequent causes of this form. Partial or complete obliteration may also follow easy non-protracted labors, and where instruments are not brought into requisition, yet in consequence of impaired vitality inflammation and loss of substance of the vagina ensues and subsequently atresia. Chemical agents locally applied to the uterus or vagina in the treatment of diseases of those parts, syphilis, vaginitis from any local or constitutional cause or any disease which produces ulceration or sloughing of the vagina are among the causes of this affection. Puech mentions three cases resulting from attacks of cholera. Courty† states that excessive and improperly performed coition, diphtheria, typhoid fever, caustic applications to the neck of the uterus, and particularly small-pox are some of the causes of atresia. Thomas‡ makes mention of a vaginal atresia produced by the passage of a sharp stick of wood, also of one caused by the retention for two hours of the trunk of a dead fœtus, the head having been previously delivered. This same author also alludes to an excellent article written upon this subject by Dr. Trask, based upon thirty-six cases, fifteen of which were due to prolonged labor. I have myself treated two cases of complicated vaginal atresia caused by the improper use of obstetrical instruments in childbirth.

There are some peculiar differences between congenital and accidental atresia and notably the following: If an atresia of the vagina is congenital, the canal is usually adherent throughout its entire length. On the contrary if it is accidental only a portion of the canal will, as rule, be obliterated; the upper extremity, the lower extremity or the middle portion of the vagina will be imperforate, while the remaining portions will be perforate.

Symptoms and Prognosis.—Vulvar atresia, with the exception of that form where the hymen alone is involved, is, as a rule,

* Op. citat., p. 398.

† Op citat.

‡ Diseases of Women. By T. Gaillard Thomas. Philadelphia, 1874, 4th edition. p. 162.

discovered in early childhood. On the other hand, attention is not usually called to the remaining forms until there are some pronounced symptoms indicative of their existence, such as inability to perform the marital act, or delayed menstruation, the patient being considerably beyond the age at which the catamenia is usually established. It has frequently happened that girls have for a long time, even for years, been under treatment for amenorrhœa until health had disappeared, when finally an atresia was found to have been the sole cause of the non external appearance of the menstrual flux. A girl may have the *molimen menstruale* and yet the flow of blood from the mucous surface of the uterus which occurs coincidently, instead of being discharged from the genital passage is retained by means of an imperforate hymen, and sometimes for a long period without the general health being affected. It is when the accumulation becomes so great that an additional amount threatens to rupture the Fallopian tubes or uterus, or be forced through the tubes into the peritoneal cavity, or there is evidence of blood poisoning that the health begins to be impaired. A physical examination under any of the circumstances just mentioned is demanded and should be insisted on. With any patient when there are indications of atresia in any part of the genital passages with impairment of health it is a duty on the part of the physician to make a physical examination for the purpose of ascertaining whether any local cause for the symptoms exists. Besides this there are often in such cases other questions hinging upon the physician's opinion aside from mere health. There are questions of happiness or misery to the individuals and families involved, if marriage is contracted, when the woman has any abnormalty about the sexual organs. This topic needs no elaboration. The duty of the physician is obvious, plainly so. One point I would insist upon, is that marriage or even an engagement should not be permitted if the woman has never menstruated, unless competent medical opinion sanctions it after thorough physical examination. On this particular point, a case of interest to myself at least, came under my observation. A young lady of an excellent family, while away from home, became engaged to a young man whom she met for the first time on the occasion of the visit. Soon after return-

ing to her own home her mother wrote to the young lady's *fiancé* that there were reasons why the engagement should not be continued until medical opinion authorized it. The girl had never menstruated, although well developed in person, in fact the external organs of generation were perfect, even the mammary glands being of more than usual size. Several medical gentlemen of eminence were consulted, and all of them concurred in the opinion that marriage was allowable. She did marry and just nine months from the day of marriage, gave birth to a healthy boy, and has since had other children, but her menstrual history has been peculiar. She menstruated for the first time after she had weaned her first child. Menstruation has never lasted for an entire day, but usually only during four or six hours. Except when pregnant or nursing, it has been regular, unattended by pain, sometimes quite profuse in quantity, yet never of longer duration than before mentioned.

The number of patients with atresia of the genital passages of all varieties which have been treated by me is seventeen. Of this number eleven were congenital, and six were accidental. For the purpose in illustrating what has already been said, and what still remains to be considered within the limits of this paper, the cases referred to are here tabulated as follows:

TABLE OF CASES OF ATRESIA OF GENITAL PASSAGES OF WOMEN.

No.	*I. Congenital Variety.*	*Age.*	*Remarks.*
1	Vulvar atresia of labia minora.	4	Operation and cure.
2	Vulvar atresia of labia minora.	12	Operation and cure.
3	Vulvar atresia of labia majora.	14	Operation and cure.
4	Imperforate hymen.	10	Operation and cure.
5	Imperforate hymen, with vaginal walls adherent for an inch and a half in the inferior portion of the canal, constituting true vaginal atresia.	20	Signs of blood poisoning from retention, the vagina being distended with menstrual blood so that fluctuation was plainly discernible. Operation successfully made.
6	Complete vaginal atresia.	22	Operation begun but not completed, for reasons given in the text. No menstrual accumulation.
7	Double vagina. Complex vaginal atresia.	28	Atresia of one vagina, probably from vaginitis. Dilation easily accomplished.
8	Absence of uterus.	34	Patient married; was subject to epileptic convulsions occurring every four weeks.
9	Complete uterine atresia.	20	Patient single. Case reported in one of my clinical lectures in *Obstetric Gazette*, January, 1880.

TABLE OF CASES OF ATRESIA, ETC.—CONTINUED.

No.	*I. Congenital Variety.*	*Age.*	*Remarks.*
10	Partial vaginal atresia, interfering with labor.	25	Labor could not be completed until the parts were incised.
11	Atresia of the upper portion of the vagina.	30	Patient married. A rudimentary uterus could be felt very indistinctly per vaginam, but plainly per rectum. No menstrual accumulation.
No.	*II. Accidental Variety.*	*Age.*	*Remarks.*
12	Partial vaginal atresia in upper portion of canal, caused by application of caustics to the uterus.	31	Patient married. Uterus could barely be touched with the finger. Operation and cure.
13	Partial vaginal atresia, with vesico-vaginal fistula.	29	First operated upon for atresia, the vagina barely admitting the little finger—a second operation was required for the fistula.
14	Partial vaginal atresia, with vesico-vaginal fistula.	19	First operated for atresia, which occupied the middle portion of vagina, not permitting a view of the fistula or cervix uteri. Afterwards operated for the fistula, which was bounded on one side by the cervix uteri—urethra obliterated.
15	Partial vaginal atresia, with vesico-vaginal fistula.	27	This case was similar to the above one except as regards the obliterated urethra.
16	Vaginal and uterine atresia or complicated atresia.	30	Caused by protracted efforts on the part of several physicians in delivering the patient of a dead child at full term. Following delivery there was severe pelvic inflammation, pelvic abscesses, and a discharge of pus for months. The upper portion of the vagina and the cervix uteri were occluded. Menstrual accumulations were found, and alarming symptoms occurred at menstrual date from threatened rupture. Successful operation. (*Detroit Review of Medicine*, June, 1876.)
17	Vaginal atresia, with large uterine fibroid.	38	Reported in *Chicago Medical Gazette*, in March, 1880.

COMMENTS ON THE FOREGOING CASES.

It will be observed that in the above list numbers 1, 2, 3 and 4 were quite young subjects, and consequently no serious trouble had resulted from the abnormality. But little comment is necessary in connection with them. The discovery of the malformation, whether accidental or resulting from the watchful care of mothers, led to speedy cure before the occurrence of menstrual accumulations. Two of the number, however, had attained the age at which the menstrual function is usually established, while number three had, previous to the surgical operation, experienced the *molimen menstruale* very markedly and menstruated soon after.

I shall briefly allude to the remaining cases at greater length than in the remarks of the tables, but will not in every instance follow the order in which they are tabulated but in such sequence as seems proper from their mutual relations.

Case number 5 was a domestic, who had been dismissed from employment and denied admission to the homes of her friends because of the belief that she was pregnant. One lady, however, by whom she had been employed requested her own physician to see her and determine the cause of her enlarged abdomen. This physician, who unfortunately was not a regular one, but one who was accredited with great shrewdness, declared the girl in the latter months of pregnancy, and so the poor girl was again sent out in disgrace. A benevolent gentleman, and one of the most distinguished public men of Michigan, learning in some way of this girl, and, believing the story of her innocence to be a true one, sent his housekeeper to provide a place for her, and desired me to ascertain the cause of her peculiar appearance. I found, as I then believed, an imperforate hymen only, and by rectal examination an accumulation of menstrual blood. When I came to operate in this case, however, I found more than an imperforate hymen—there was atresia of the lower portion of the vagina to the extent of an inch or more. After incising there was a discharge of several ounces of menstrual fluid of the usual tarry consistency, whereupon the vagina and uterus were syringed out with warm water. The operation itself requires no special comment in this place; suffice it to say that it combined the tearing and cutting processes, followed by the use of vaginal plugs until the parts were healed.

The patient numbered 6 in the list was a young lady twenty-two years of age, who had been treated by regulars and irregulars, of all kinds and creeds, during a period of several years to "bring on her courses." Among the multitude of her medical attendants not one had suggested the propriety of making a physical examination until she became the patient of Dr. G., a painstaking and skillful physician of the town where she resided. I was called to see the patient with him, and we discovered the cause of the amenorrhoea to be a complete vaginal atresia, but there was no accumulation of menstrual blood. The external

organs of generation exterior to the vagina were well developed as were also the mammary glands. The mons veneris was covered with hair, which is not usually the case unless the ovaries are developed. By examining per rectum a uterus could be felt, although quite small. By means of a sound in the bladder and a finger in the rectum the vagina could be plainly felt as a large round cord. An operation to construct a vagina, or rather to dilate the rudimentary one already existing, was proposed and begun by carefully opening the canal for about an inch and a half and using tents to keep it open. This was prior to the adoption of the mode of exploration by dilating the urethra and examining the interior of the female bladder with a finger. I deemed it my duty to say to the mother of the girl that marriage, under the circumstances should not be thought of, but that if the operation ultimately succeeded then would be the time to decide the matrimonial question. The girl, it seems, was engaged, but was willing to wait until the propriety of marriage could be decided by the success or failure of the surgical procedures. The lover, however, learning the true state of affairs, suddenly emigrated to a milder climate, and the girl herself was so disgusted with his course that she pulled out the tents from the partially constructed vagina and vowed to lead a life of celibacy. Consequently what might have been accomplished in her case will never be known. In my own mind there is no doubt that complete success would have attended the operation in due time, that is to say, a vagina would have been opened, not constructed, in evidence of which was the fact that the cordlike vagina could be so distinctly felt.

Patient No. 7, with a double vagina, has been sufficiently spoken of under the head of vaginal atresia. This case represents that rare form of artesia designated by Puech, Courty and others as complex, viz: a double vagina, with one canal imperforate.

Case No. 8 was referred to me by Dr. Dayton, of Lima, Indiana, with whom I saw her, and from whom I learned the peculiarities of her medical history. She was thirty-four years of age, a brunette of spare form, and had been married for several years, the exact number I did not learn. Following her marriage she had become subject to epileptic convulsions; at least they were so

designated, but they may have been merely epileptiform, or hystero-epileptic. These convulsions occurred once a month, and coincident with a marked *molimen menstruale*, and occurred at no other time. Her external organs of generation were well developed, giving sufficient evidence of fully developed ovaries. She acknowledged possessing a keen sexual appetite, and her husband stated that it was at times rather aggressive. The vagina was simply a pouch of normal length, but without the vestige of a uterus to be felt within or beyond it. But by rectal exploration a rudimentary uterus of minute size could be plainly felt, as could also the converging round and broad ligaments. As it was manifest that the epileptic or epileptiform convulsions occurring as they did coincident with the *molimen menstruale*, were of ovarian origin, I proposed Battey's operation as affording the only possible means of relief, but the patient would not consent to it, and, soon after, passed beyond my observation.

Patient No. 9: An account of this case was published in the *Obstetric Gazette* for January, 1880, as a clinical lecture, by Dr. Helms. The patient alluded to, an inmate of Mercy Hospital of this city, was a girl of twenty, with perfectly developed external organs of generation, the mammæ, indeed, being larger than common. The patient longed to be relieved of the distressing symptoms which marked her case, and which occurred once a month, such as congestive headache, severe pelvic and abdominal pains, etc. These symptoms had of late been progressive, and had attained such severity as to be alarming. There was no accumulation of menstrual blood; the vagina was of normal appearance, size and length, but the cervix uteri appeared by speculum examination as a mere nodule, without the least indication of a uterine canal. By rectal examination, the uterus was found to be about three-fourths of an inch in length, thus indicating arrest of development with atresia. This patient, as before remarked, was the subject of a clinical lecture, and the condition of things as described was shown to my class. As no uterine canal could be found by ordinary means, I clipped off with scissors a small fragment of the rudimentary neck, but no further signs of a canal were discovered; still this procedure proved of great service, as the loss of blood near the time of approaching *molimen* materially

lessened her sufferings. The only chance of a radical cure seemed too formidable to advise until milder means had been exhausted. The radical cure was removal of the ovaries; but, from the fact that the abstraction of blood immediately preceding the *molimen menstruale* had so greatly alleviated her sufferings, I advised the periodical abstraction of blood, by means of leeches applied to the perineum. As long as I continued to hear from the patient, this plan proved successful.

Case No. 11 was in the person of a primapara whom I attended in labor. She was a woman of unusual size, with a correspondingly large pelvis. Labor progressed favorably until the child's head was in the pelvic excavation, when it stopped. Making a careful examination, I now discovered that there was partial atresia of the lower portion of the vagina. Here the obstructing membranes being put upon the stretch by the process of labor gave the appearance of a broad band, and, while in this tense condition, I made an incision through them fully three inches in length. The incision once made, laber was completed in a brief space of time. The atresia was simply a semilunar-shaped hymen, which, not having been previously ruptured, remained an obstacle to the free egress of a full-sized fœtus.

The case of patient No. 11 presented some similarities to that of No. 8. The remarks in the tabulated list in connection with this case comprise about all that is requisite for this paper. This woman consulted me for the purpose of ascertaining whether or no she could be successfully treated for sterility. She was thirty years of age, of spare frame. The external organs of generation were not perfectly developed; the labia presented a shriveled appearance; the *mons veneris* was scantily supplied with hairs; the mammæ were small, with but little gland structures; the vagina was sufficiently capacious, but not of usual length, ending in a blind pouch, which gave no appearance of a uterus, which organ was only discoverable by firm pressure in the hypogastrium, or by rectal examination, in either of which cases a rudimentary uterus could be readily felt. The case was simply one of partial vaginal atresia of this congenital variety, with non-development of the uterus. I could not advise or institute any surgical pro-

cedures or treatment, as there were no urgent symptoms making such demands.

The remaining cases which I have tabulated are all non-congenital, the results of either injury or disease.

Patient No. 12 consulted me on account of uterine disease, for which she had already been receiving treatment during the previous two years. This was at a time when all real or fancied uterine diseases were subjected to the application of caustics. Such had likewise been the local treatment in the case of the patient now under consideration. She said that the stick of caustic had often been left in the mouth of the womb; that the treatment had been very painful, and particularly the last time the caustic had been applied, when a large stick of it had been used. For some days she was unable to walk, and finally a discharge of pus and blood set in. Three or four months had now elapsed since the last application, but, although the painful symptoms had subsided and the discharge of pus ceased, she was conscious of something abnormal, as coition could not be perfectly performed, and all attempts caused severe pain and oftentimes discharge of blood. An examination revealed the vagina almost obliterated in the upper portion, so that a finger could with great difficulty be made to force its way to the cervix uteri, while the cervix itself was bound to the left side of the vagina by firm adhesions. The cause of this partial atresia was, without doubt, the free use of caustic, which was dissolved in the vagina instead of the uterus. A cure was effected by means of cutting with scissors a portion of the adhesive bands, and by constant use of vaginal plugs.

Cases 13, 14 and 15 will receive but little comment, as a brief allusion will be sufficient. A full and succinct history of each one would be of more interest as relating to vesico-vaginal fistula than to the subject under consideration. Every one familiar with vesico-vaginal fistula knows that one of the most frequent complications met with is that produced by the presence of cicatricial tissue, which is often in the form of bands of greater or less dimensions. It may be considered an unusual case, as far as my own experience goes, that has no cicatricial bands in the vagina. The patients here referred to, however, had more than cicatricial

bands, in consequence of the causes producing fistula. There resulted, in each case, almost complete obliteration of the vagina, fully entitling each one to be designated as incomplete vaginal atresia. In No. 13 the little finger could with difficulty be crowded into the vagina, requiring two operations preliminary to the one for the fistula, and also the use of dilators. Not until after the first operations had been performed could either the neck of the uterus or the opening into the bladder be felt or seen. Nos. 14 and 15 were similar to the case just mentioned, there being vaginal obliteration to such an extent as to necessitate an operation before the fistula could be seen or felt.

Patient No. 16 was a case of unusual interest to the writer, at least. It was one of those cases of which it is extremely difficult to describe all the particulars so that one not seeing and examining the patient can scarcely get a clearly correct opinion of the complications and difficulties of the operations made for her relief. I am not alone in this opinion, for several gentlemen present at the time I operated expressed themselves similarly. Among this number was Dr. Johnson, of Detroit, a former pupil and assistant of Simon, of Heidelberg, and Dr. H. O. Perley, Asst. Surgeon U. S. A., at that time a resident of Detroit. An account of the case was published in the Detroit *Review of Medicine* for June, 1876, from which I will give a brief abstract: *

"Mrs. C. of Ohio, consulted me on January 12, 1876, with reference to an operation for atresia, which she stated was caused by the delivery of a dead child May 10, 1875. She was confined to her bed for six weeks after delivery on account of inflammation of the womb and vagina; subsequently abscesses formed within the pelvis, and discharged externally from time to time up to the date of her visit to me. Three months after delivery there were symptoms indicating the appearance of the menses, with some constitutional disturbance. A month later there was again the *molimen menstruale*, with increased pain and more general disturbance; the pain was progressively severe with each return of

* "Atresia vaginæ et uteri; produced by instrumental delivery of a dead child; operation and cure." By Edward W. Jenks, M.D., Professor of Medical and Surgical Diseases of Women, Detroit Medical College, Detroit. *Review of Medicine*, June, 1876.

the menstrual date, and had become so alarming that, at the time of her visit to me, both she and her husband earnestly desired that some step be taken for her relief before the return of another attempt at menstruation. * * * * *
Physical examination of the generative organs revealed a laceration of the perineum to the margin of the sphincter ani externum; the vagina was closed superiorily, nor could any portion of the uterus be felt in this canal, neither could I, by any means of speculum and probe, find any trace of the upper part of the vagina in the abundant cicatricial material which obliterated it. It seemed at first as if the vagina was about the normal length, and that it was only a short distance to the neck of the uterus, and yet it could not be felt. This state was further explained by a rectal examination. By the rectum the body of the uterus was felt very high and retroverted, and apparently held in that position by firm adhesion, as if the inflammation had extended to the pelvic peritoneum simultaneously with the vaginal and uterine inflammations. Besides this the vagina was an unusually long one, and its apparent length at this time is explained by still another reason, namely, the great size of the patient, who weighed two hundred and eighty pounds. The abdominal walls, burdened with fat, rendered conjoined manipulation of little service in diagnosis or in the subsequent operation. The same condition of the labia majora made the vagina seem long, and rendered ocular examination more difficult than usual." * * *
The patient being placed in the exaggerated lithotomy position, the pelvic organs were fixed by the pressure of an assistant's hand on the hypogastrium. I then, with sharp pointed scissors, carefully cut a portion of the cicatrix in the presumed direction of the uterus, occasionally ascertaining the safety of my incisions by introducing a finger into the rectum, or the sound into the bladder. I soon found my finger and sound in close proximity, showing the necessity of great caution lest I should cut either into the peritoneum or into the bladder. After cutting through upwards of two inches of cicatrical tissue I reached the uterus, but as there was no indication as to the locality of the os uteri I separated a portion of the neck from its morbid vaginal adhesions, but the os was not apparent, nor was there anything in the

appearance of the enucleated neck to indicate the route into the cavity of the uterus, so I then cut with a pair of very delicate and sharp pointed scissors in the direction of the uterine canal for about an inch, when there gushed out between two and three ounces of menstrual blood. The uterine canal being now discernable, I enlarged the opening still more and cut away the cicatrix from the newly made os. A tent of lint was put in the uterine canal and the newly opened portion of the vagina packed with the same material, when the patient was put in bed. But little blood was lost during the operation aside from the menstrual blood, and when the patient was restored to consciousness she was kept free from pain by moderate doses of morphine per rectum. The next day the lint was removed and a fresh quantity put in with the finger, for the purpose of preventing union by first intention. The patient complained but little of pain, and after the removal of the first tampon there was but little oozing of blood. The fourth day after the operation word was brought me that Mrs. C. had a "chill," and complained of quite severe pain in the abdomen. It was several hours before I saw her, but when I did I was gratified to learn that the rigor and pain were simply the ushering in of the menstrual flow, and that she was now free from pain. The catamenial discharge continued five days, as was her former custom. This I considered a happy occurrence, so soon after the operation, as the danger of closure of the wounds, especially within the uterus, was by this opportune discharge greatly diminished. The patient rapidly recovered her usual health, and three weeks later returned to her home." * * * "In conclusion, there are certain points of interest in connection with this case to which attention is directed: *First.*—The dangers as marked by the symptoms of rupture of the Fallopian tubes or regurgitation of menstrual blood into the peritoneal cavity, if the operation had been much longer postponed. *Second.*—The complications from traumatic causes, viz: a retroverted uterus, bound down by peritoneal adhesions, obliterating a portion of the uterine canal, and the locality of the cervix uteri obscured by a great quantity of vaginal cicatricial tissue, to which may be added the difficulties attending any manipulation on account of the size and obesity of the patient. *Third.*—The

advantage of operating just preceding the regular catamenial date, as was manifested in this case, by the menstrual blood keeping the newly opened canals pervious in a better manner than could be done by tents, or any other device."

Case number 17 was reported in the *Chicago Medical Gazette* in March, 1880, under the following heading: "Supposed Inversion of the Uterus—Fibroid Development of Posterior Half of Uterus and Vaginal Atresia." A full relation of the peculiarities of the case would contain much that is not pertinent to the subject of this paper. It will suffice to say that there was almost complete vaginal atresia, the perforate portion of the canal barely admitting a small sized probe. The atresia was overcome by lacerating or tearing with the finger, so that a diagnosis of the exact condition was easily determined. The spherical character of the tumor together with the atresia was what led to the belief that it was a case of inverted uterus. The atresia doubtless had its origin in vaginitis, which I judged from the history of the case as related to me, was caused by the application of caustics, employed for some reason past discovery in the treatment of the patient.

Treatment.—The treatment to which I have subjected my own patients has been set forth in the reports of individual cases, but the subject is of sufficient importance to be more fully discussed.

At the Baltimore meeting of the American Gynecological Society an excellent paper was read by Prof. Isaac E. Taylor, of New York, entitled, "Atresia of the Vagina, Congenital or Accidental, in the Pregnant or Non-pregnant Female." I was not present at the meeting, and, owing to delay in publishing the society's transactions, did not have the privilege of reading Dr. Taylor's paper until the principal portion of this one was written. Dr. Taylor's paper I consider a valuable addition to the literature of the subject, as his own experience has been large and varied. He has also drawn from the experience of others. The subject is one which has not been written upon very extensively, the literature consisting chiefly of the reports of cases. Dr. Taylor's paper possesses an interest in one particular, to which I have merely made brief allusion; that is the association of pregnancy with complete vaginal atresia. It does not discuss the whole

subject of atresia, for he announces in the first clause that he desires to confine himself "to cases of complete congenital atresia and to accidental absence or atresia of the utero-vaginal canal in the pregnant and non-pregnant woman." This writer further states that, "Cases of congenital absence of the vagina are rare; cases of the same nature existing during pregnancy and involving two lives are still more so."

He relates a case of complete congenital atresia of the vagina, where the woman became pregnant and was safely delivered, at full term, of a living child. He also refers to a case of Dr. Simmons, extracted from the St. Louis *Medical Examiner* for February, 1847, of a similar character, and yet, in each one, the physicians were unable to find the minutest opening between the lower or more external portion of the vagina and the uterus. By Dr. Simmons this question is asked: "In what manner did conception take place?" Dr. Taylor, referring to his own case, and in the same connection speaking of Dr. Simmons', gives a "solution of the mystery." As the discussion of this question is not strictly pertinent to the present paper, it will not be further considered.

The treatment of all forms of atresia cannot be otherwise than surgical, and, with the exception of certain forms of partial atresia, all may be considered of great importance, requiring care, caution and skill. Even the operation for an imperforate hymen, so simple in itself, has many times proved fatal. Bernutz* lost four patients; Thomas† mentions two fatal cases, one of which, indeed, was his own. Sir James Y. Simpson collected the history of several cases where the operation proved fatal; while, scattered through medical literature in general, may be found the reports of many of these operations, which resulted in the death of the patient. Simpson mentions a case of death, in which there was occlusion of the vagina from adhesion, the septum being quite thin, but, as the menstrual blood was retained, a small incision was made, through which there poured out, during a number of days, large quantities of the usual dark grumous fluid. Surgical fever set in on the third day after the incision was made,

* Clin. Méd. sur les Mals des Femmes. Tome 1, p. 303.
† Diseases of Women. By T. Gaillard Thomas, Prof., etc. Phila., 1879.

and in a few days more the patient died. An autopsy revealed a distended uterus with inflamed walls, and inflammation extending thence to the peritoneum. The mistake made by the operator in this case was the small incision and neglect to wash out the cavity, as undoubtedly the entrance of air had caused decomposition, resulting in death from septicemia. This is a point which will be discussed later.

"It is conceded," says Dr. Taylor, "that, no matter what the exact nature of the obstruction may be, the accidents which cause death after operation are almost identical." While I would accept this as in the main true, it still seems to me that the statement requires modification.

There are three causes producing death, which are not identical in their nature; they are septicemia, inflammation and rupture; consequently, it seems to me, that it could with greater propriety be said that the deaths which occur in consequence of operations, no matter what be the nature of the obstruction, are generally due to septicemia, inflammation or rupture; in some instances to a combination of these causes, and occasionally to the shock of rupture alone, without the supervention of either septicemia or inflammation. Unquestionably septicemia ranks first as the most fatal, particularly after operations for vulvar or vaginal atresia. This being the case, the prophylaxis of blood-poisoning is of paramount importance, and should not be lost sight of in any surgical procedure, or in the after-treatment.

Owing to the dangers attending surgical operations of this variety, even eminent surgeons have objected to them, and advise non-interference; but such advice is not likely to be followed at the present time, when so much is being accomplished by antiseptic treatment. The propriety of surgical interference, or the necessity for it, can only be determined in each individual case. Where life or health is threatened, surgical procedure seems to be demanded.

There is a peculiar feature in the history of complete or incomplete atresias of the generative passages, which is interesting, and has a bearing on treatment in cases where there is an accumulation of menstrual blood. This feature is alluded to by Barnes.*

* Diseases of Women. By Robert Barnes, M.D., London, Lecturer on Obstetrics, etc. Phila. 1878; page 206.

When there is stenosis or atresia of long continuance, the genital canal "undergoes retrograde dilatation above the seat of the stricture. This is the almost inevitable consequence of the futile attempts of the muscular coat to expel the retained contents." This effect is seen in the most marked form in cases of imperforate hymen; the vagina, being the most distensible part of the canal, dilates first, forming a large pouch; then the cervix uteri is distended; then the cavity of the body of the uterus, and lastly the Fallopian tubes. This dilatation, conservative in its effects by accommodating the contents which cannot be evacuated, has its limits. When these are reached, the danger of rupture or perforation at the weakest point is great. Before such an occurrence takes place, the imprisoned fluid, by reason of the constant pressure to which it is being subjected, may be forced to ooze through the walls of the uterus in drops, causing septicemia or peritonitis. As analagous to this condition, the opinion is expressed by Barnes that in a similar manner some cases of pelvic peritonitis are produced. More commonly, in consequence of retained menstrual blood, equally grave results of a different kind may follow. The uterus, exerting great pressure upon the fluid, may force it into and through the Fallopian tubes, whence it escapes at their fimbriated extremities, or, it may be, forced through some weakened part, producing a rupture. Either of these occurrences are rendered easier on account of the continued dilatation of the tubes. What has just been stated has an important bearing upon operations for imperforate hymen. Again, the sudden evacuation of a large quantity of menstrual blood by a free incision may cause such sudden collapse of the uterine walls as to excite contraction of that organ, and, in consequence, some of the blood, by a regurgitating process, is forced through the entire length of the tubes into the peritoneal cavity, or else through the substance of the tubes themselves, rupture taking place at the weakest spot of the distended walls. It is thought by some that the more sudden the evacuation the more liable such occurrence. It is believed by many that the sudden admission of atmospheric air into the vagina is the cause of the uterine contraction, rather than the collapse of that viscus. A case is related by Béclard, in which the uterus burst, discharging into

the bladder. Other writers have mentioned instances of rupture of the hymen. Puech refers to a case of spontaneous cure of an imperforate hymen, by reason of ulceration of the obstructing membrane. Another condition demanding surgical interference in cases of atresia is where the menstrual fluid, being retained there, is liability of blood-poisoning from absorption into the system of the changed blood. The patient in my own list, numbered 5, showed this condition in a pronounced manner.

It might be interesting to some of my auditors to hear the reports of peculiar cases and the opinions of distinguished authorities, on the treatment of the class of abnormalities under consideration, but it seems needless to me in this assembly of practicing physicians to relate what many are familiar with and what all can have access to in most of the late text books on diseases of women.

Without further discussion of these points, or the demands for surgical interference, the modes of operating and the treatment requisite to render operations successful will be considered.

The evacuation of retained menstrual blood can be accomplished with greater safety by means of an aspirator than by any other method. In cases of imperforate hymen the membrane should not be incised until it is first ascertained by rectal examination whether menstrual blood is present, and if found in considerable quantity, the fluid should be aspirated, and as soon as it is believed that all is thus evacuated, then a free opening should be made into the vagina, first cutting and then tearing; the vagina, and if possible, the uterus should be washed out with warm water until it runs out without discoloration. By so doing there is but little danger of regurgitation of the fluid and the risks of septicæmia are lessened. If the quantity is considerable, then the fluid should not all be aspirated at one time but at different times, for, if the contents are nearly all drawn away at once, the ensuing collapse excites the uterus to contractions which may cause the regurgitation or rupture previously referred to. Small openings should never be made for the purpose of gradual drainage, as they afford ingress to air, causing subsequent decomposition.

Bermutz, who lost four patients from free incisions through the hymen, selected as the time for operating, the second week after

menstruation, as the time when the organs are less liable to be disturbed.

In cases of children, some authorities have advised no interference until the age of puberty, but I am of the opinion that an imperforate hymen or vagina, the only form of atresia likely to be discovered in childhood, should be operated on and kept open by tents. In children incisions should be avoided if possible and the canal opened by laceration or tearing.

The means of opening the genital canal, whether the obstruction be in the vagina or in the uterus, are tearing or laceration, the scalpel, the scissors and the trocar. The aspirator can scarcely be enumerated as a means of opening an imperforate or occluded vagina or uterus, as its use is rather for evacuating fluid therein contained.

In some instances a combination of tearing and cutting serves the best purpose. As a rule I would advocate giving preference to the tearing process in congenital atresias, but it will be found impracticable in the accidental varieties. Emmet prefers scissors, as is well known to all familiar with his practice. My own choice for the vagina is scissors and for the uterus either very delicate scissors or a tenotomy knife. The tearing open of imperforate canals with the finger is usually the better as well as easier plan, but where union has occurred in consequence of inflammation or injury, tearing can be done only to a limited extent, for the reason that dense structures like cicatricial tissue will not readily tear and if the requisite force is applied one is liable to lacerate around rather than through it; the character of the obstruction should always determine the mode of overcoming it. The trocar I would avoid as much as possible, as about the only case where I deem it admissible is in uterine atresia. To those who practice one of the operations of Amussat the trocar is indispensible, but that operation, which consists of plunging the trocar through the rectum into the vagina for the purpose of evacuating the menstrual blood is, as a rule, unwarrantable. This may seem strong language, since for years this has been successfully practiced, but I firmly believe that the case must possess most unusual abnormality if menstrual blood cannot be abstracted along the route of the vagina, its natural and only proper outlet. The trocar has

proved serviceable in atresia of the neck of the uterus, serving in some instances indeed a much better purpose for opening the canal than either the knife or the scissors. Syme* objects to the trocar and is in favor of the knife, which he uses with great freedom.

It is important, after the vagina or uterus is made perforate by operation, that some measures be taken to keep it so by means of tents, plugs or dilators. One case came under my observation where a physician had plunged a trocar through an imperforate hymen, a large quantity of restrained menstrual blood escaped, but the incision closed up and a subsequent operation became necessary.

It has been a matter of considerable discussion by many surgeons in cases of complete vaginal atresia how much should be done in a single operation. Amussat† in 1832, in operating in a case of congenital atresia, cut through the skin, and then from fear of entering either the rectum or bladder with his knife tore an opening for some distance with his finger and packed the orifice with a sponge; after three days he repeated the process, and subsequently again repeated it; on the tenth day he reached the tumor, which he emptied with a trocar. The patient suffered from severe inflammation of the Fallopian tubes, but after four operations with the trocar the canal remained sufficiently open. Emmet‡ advocates an opposite course from that pursued by Amussat, and cites cases where he accomplished at a single operation all that was accomplished by Amussat in ten days. In my own case, number 16, I unwisely followed the plan of Amussat for the same reason, but I have never ceased to regret that I did not attempt to reach the uterus at the first operation, as the peculiar circumstances in which the patient was placed was the means of making it also the last and only one. I am convinced that the vagina should be made perforate with as few operations as possible—and whenever it is practicable it should be accomplished in one operation, exception always being made in such cases as have been alluded to, where there is a large accumulation of menstrual

* Taylor, Op. citat.
† Gaz. Med. de Paris, 1835.
‡ Principles and Practice of Gynecology, by Thomas Addis Emmet, 2d ed. 1880.

fluid, and there is reason for thinking that considerable dilatation of the uterus or tubes exists. In a very recently published discussion on the method of removal of retained menstrual fluid, by members of the Obstetrical Society of N. Y.* a variety of opinions were expressed, some advocating rapid removal and others a slow process. Emmet expressed himself strongly in favor of a rapid evacuation, and as to the most unfavorable cases he believes them to be those of congenital absence of the vagina with a distended uterus. Dr. Lusk said that the danger was greatest from inflammation, if air entered a flabby vagina and uterus; while firm contraction removed danger. Dr. Mundé said the chief source of danger was from sepsis and regurgitation through the Fallopian tubes. Dr. Skene believed that the chief source of danger is inflammation; that death more frequently is caused by it than by septicemia; he would give patients to understand that the operation is a dangerous one, and in his opinion inflammation is the danger most to be feared.

Another undecided question is, whether it is better to operate before or after menstruation or the *molimen*. The history of my own case, number 16, leads me to give most pronounced favor to operations before the period. Where there is no accumulation, and the operation is chiefly for the purpose of relieving a deformity, then the time of greatest calm of the generative organs should be selected, which is ten or twelve days after the menstrual date. I do not believe it is wise to adopt a strict rule of practice however in regard to this matter. The pathological condition, as well as the exigency of the case, must be considered, thus in truth making each case a rule for itself. The same is perhaps true as regards operations for atresia in pregnancy, yet my own opinion, based solely on the experience of others, is that it is better to wait until labor has begun rather than to make any operation prior to the establishment of the labor pains.

The question has been asked, "When should uterine injections be resorted to?" It is claimed that their immediate use causes inflammation, but it is quite probable that such a condition has resulted rather from the manner of their use; even the forcible

* Amer. Journal of Obstetrics, July, 1880, pg. 609.

injection has been used, while some have employed astringent and medicated injections. The use of injections is of great importance for the prevention of septicemia. The manner in which they are used is of equal importance if it is the uterus that is to be washed out. It is not positively necessary that haste should be exercised in employing them, as no great amount of decomposition and certainly no blood-poisoning can occur in from two to six hours; but, as a rule quite safe to follow, the passage should be washed as soon as practicable after the atresia is overcome. I have in a former paper* expressed my own views and the opinions of recognized authorities on the propriety, the dangers and the manner of using intra-uterine injections. The same general rules are to be followed in washing out the uterus after operating for atresia as in any other condition or disorder. That no harm may follow their use, certain requisites are important, as follows: (*a.*) A free outlet should be insured for the injected fluid. (*b.*) Air must not be admitted with the injected fluid. (*c.*) Cold astringent or irritating injections should not be made use of under any circumstances within the uterus, as they are apt to excite contraction, in consequence of which the fluid is liable to be forced through the tubes, or cause rupture at the weakest point. (*d.*) Forcible injections are to be avoided, as the injected fluid may be forced through the tubes, or cause rupture at some point already weakened by dilatation.

In looking over all attainable literature on the subject of this paper, I have been impressed with the meagerness of it, and with the apparently unsettled views of the majority of writers in regard to treatment. There are very few exhaustive essays on the subject, the literature consisting chiefly of reports of cases, with fragments here and there in text-books and the medical periodicals, the most elaborate essay being the one of Puech before referred to. It is possible that one cause of the divided opinions regarding treatment may be due to the fact that, whatever the treatment adopted, cases prove fatal, and with the necessarily limited number coming within the observation of any one individual, each thinks of his serious or fatal cases that, if they had

* The Treatment of Puerperal Septicemia, etc. By Edward W. Jenks, M.D. Trans. Am. Gyn. Society, 1879.

been subjected to a different course of treatment than the one pursued, they might have been less serious, or even recovered.

In concluding this paper, I will, on the subject of treatment, only attempt to give a summary. From the literature of the subject and the reports of cases, to which may be added my own observation and experience, I am led to the adoption of the following conclusions:

I. As fatal results have followed operations for the simplest varieties of atresia, the surgeon should apprize the patient, or her friends, of every possible danger prior to operating.

II. In case of menstrual retention from vulvar, vaginal or uterine atresia the fluid should not be evacuated via the rectum with a trocar, but in the route pursued by the vagina.

III. When there is reason for believing that there is a large quantity of menstrual fluid distending the uterus or Fallopian tubes, the safest mode of evacuating it is by means of an aspirator prior to any surgical procedure for the cure of an atresia.

IV. The evacuation of menstrual fluid should never be through a small orifice (with the exception of aspiration), but through a free opening, after which the vagina and uterus should be thoroughly washed out with warm water, as the best means of preventing or curing septicemia or inflammation.

V. Septicemia, inflammation and rupture of the Fallopian tubes are the chief disasters attending atresia, or following operations for its cure.

VI. Congenital atresia of the vagina can be best relieved by tearing with the finger, as the rudimentary canal already existing serves a similar purpose to the surgeon that an instrumental director does in cutting operations; but the accidental forms require cutting, for which operation scissors are preferable to the knife; in some cases both cutting and tearing are are requisite.

VII. There is reason for believing that when there is an accumulation of menstrual fluid within the vagina and uterus, particularly within the latter, that the best time to operate is immediately prior to the menstrual date, as the patency of the newly opened canal is thus better insured.

VIII. Notwithstanding the dangers attending these operations there is good reason for believing that by care and caution,

and with a proper use of antiseptics, favorable results may be expected from operations for either congenital or accidental atresias.

ARTICLE II.

LEUCASMUS OR VITILIGO. A Clinical Lecture delivered at the Central Free Dispensary. By CHAS. W. EARLE, M.D., Professor of Diseases of Children, Woman's Medical College. Reported by Dr. Julia N. Moss.

History.—During the summer of 1879, among the children who presented themselves at the Central Dispensary was the following, afflicted with a disease which in the records of dermatology seems to be somewhat rare.

Maggie Conlan, aged twelve, born in Chicago, of Irish parentage, resides at 394 Hubbard street, the sanitary condition of the neighborhood being good.

The family history is unmarked. Her maternal grandfather died of consumption, and her father is subject to headache, and pain in side, has a few gray hairs and is thirty-seven years of age.

Patient's health prior to four years ago was good. At that time she had occasional, but not severe headaches; this continued for three years, when headaches appeared daily, about 11 a. m., continuing an hour and returned in the afternoon. During this period she had also complained of irregular pains in the chest. In the winter, 1878–79, she suffered from irregular chills, twice daily, which continued about ten months, appetite poor, bowels constipated. Her headaches, which previously had been intermittent, became constant, and her hair began to turn gray, and the skin of the forehead became very white. White spots appeared upon the neck, and one upon the body, the skin of the face elsewhere became very yellow, some yellow spots also appeared upon the neck and chest.

When first seen in the early summer of 1879, she presented the usual development of that age, well nourished, but slightly anæmic, but complained of great weakness, and had had a hacking cough for some months, voice very hoarse; examination

revealed a follicular pharyngitis, but lung sounds were normal, and circulation good.

There were various tender spots in the left axillary region, also in the right infra-clavicular, and in the posterior region of the chest, to the right of the spine, but no headache for past three weeks. An irregular line ran around the forehead, above which the skin was intensely pearly white; there were also two white spots each side of the neck, and one over the lower portion of sternum, skin of face and body yellowish, also two small yellow patches upon the forehead. Hair was fully one-half gray, and growing very low upon forehead.

Patient was put upon a combination of iron, quinine and strychnine.

August 10.—Grayness of hair is disappearing, also the marked yellow and pearly white tints of the skin are becoming obliterated.

September 8.—Appetite better, but dizzy in the morning, headache has returned, bowels regular, but pain in abdomen, hoarseness and cough continue.

Abdominal pain continuing through the month with an attack of diarrhœa (possibly consequent upon a cold), the tonic treatment was discontinued, and a prescription given, containing bismuth, pepsin and acid muriatic dil., which entirely relieved abdominal symptoms.

In the early part of October the patient had intermittent attacks of severe pain in right chest, which were soon relieved by cinchona; continued to improve until December 12th, when visits were discontinued.

May, 1880, patient again presents herself at dispensary, headache has returned, peculiar discoloration of the skin intensified, grayness of hair also increasing, bowels regular, appetite medium; child has become exceedingly irritable in disposition, and very hard to control, giving parents much anxiety and trouble.

The history having been read, the lecturer stated that he had taken the trouble to visit the child and to have a conversation with her mother.

A re-examination of the body was made, and leucasmic spots were found at the ensiform cartilage and investing the left nipple.

Brown spots were also found in different parts of the chest, but none extending below a point corresponding with a line drawn around the body at the umbilicus.

With regard to the irritability of the child, as mentioned in the history, the mother remarked to the Professor that she had often thought, "if the good Lord would take the child away (glory be to His name), she (the mother) would not be *displazed.*"

Patients with this disease do not come to our notice in any considerable number. Prof. Maynard, who has had charge of this class of diseases in this institution for over nine years, and has treated during that time 3000 consecutive skin diseases, has seen three cases. Erastus Wilson speaks of only twelve cases. Duhring says the affection is rare.

There is some reason to suppose that in other countries, India, for instance, it is more common. Tilbury Fox remarks, in regard to its frequency in that country, that the well-to-do natives suffer from it. Nearly all dermatologists, as far as I have had access to their works, agree that it is a disease of pigmentation, accompanied with more or less debility of the nervous powers.

The *synonyms* are numerous, and vary as authorities base their classification upon the presumed *cause* of the disease or the *visual appearance* of the morbid integument.

From among these many names I will only mention leucasmus, achroma, alphosis, albinismus, acquired piebald skin and vitiligo.

It is a malady confined to the retemucosum, and may be *general* or *partial.* If the disease were general, it would usually be congenital, and there would be uniformly an absence of pigment over the whole surface of the body. To this class of people the name of Albino has been applied, concerning whom I do not purpose at this time to make any remarks. Most of you, undoubtedly, have seen these individuals, as they are exhibited throughout the country.

Coming now to speak more particularly of the acquired achromic condition or *partial* leucasmus, we find that it is probably most common among the negro race, occasionally, however, being found among the whites, and usually associated with some form of diseased innervation and nutrition.

In the little patient now before us we find a long history of malaria, neuralgia and anæmia. Indeed it was not until she had suffered with irregular chills and tender spots and attacks of neuralgia for more than two years that she began to notice this peculiarity in her integument.

It will be noticed that the white spots, of which there are several, terminate abruptly, and that the surrounding skin, in some instances at least, is of a darker color than usual—that is we find an absence of pigment in the parts afflicted with leucasmus and an increase of this same formation in the contiguous integument.

Referring almost inadvertently to a *deposition* of pigment in the derma, when the case before us is an absence of the same I may be allowed to speak briefly of the different chromatogenous diseases we find manifesting themselves in the variations of color of the skin.

We find four varieties and they occur, as regards frequency in about the order which I will give them:

Melanoderma or melasma;

Xanthoderma;

Leucoderma;

Cyanoderma.

The first is a deposit of, or change to black pigment and the best types, of course, are found in the colored race. We have however at least one pathological condition in which dark deposits take place; that is Addison's disease, and there is a physiological process during the course of which a partial or local melasma is frequently seen. I refer to the change in color which takes place around the nipple during pregnancy. The best illustration of xanthoma or yellow discoloration is the round flat patch commonly called a freckle, to which, according to some authorities, should be added chloasma or pityriasis versicolor, familiarly known among the people as liver spots. Leucoderma, or white spots, is the subject of this lecture, and cyanoderma or blue discoloration of the skin is so rare that many dermatologists believe it a myth.

In regard to this classification it is proper for me to say that the writers of our standard books on skin diseases differ greatly. Some class all under diseases of the pigment system. Others

speak of the xanthoderma as a *new growth* and Vitiligo under the head of *atrophies*. Concerning this difference of authors I can say nothing at this time, but will only attempt to present an epitome for your guidance as general practitioners.

As to the *causes* of leucasmus we can say but little. Deficient innervation has certainly to do with it, as also has depressing diseases, particularly those of malarial origin, when long continued. There is also considerable testimony which goes to show that exposure to the sun's rays, especially in hot climates, may be a producing cause.

The *diagnosis* is not difficult. You will find white spots upon a skin which is not at all changed in structure. Where leucodermic patches take place on the scalp, you frequently find the hair white, as in the case before us. In the leprous affections we have whiteness of the skin, but in addition such a *thickening* and *infiltration*, associated with so many other symptoms of a severe order, that you will hardly have trouble in differentiating from the local disease under consideration.

Treatment.—This patient has always improved when placed on tonics. Indeed, after the physician is assured that all the functions of the body are well and properly performed, tonics, perhaps of the alterative varieties, are the medicines indicated. The treatment at best will not be particularly successful. You should, however, pay particular attention to digestion, secretion and excretion, and then give the ferruginous preparations with quinine. The ordinary tr. ferri chloridi with quinine is excellent, or the mineral acids with quinine. Arsenic with iron and some of the varieties of cinchona will be indicated at times. Strychnia will be valuable in some cases, as also will malt and cod liver oil, and syrup of the iodide of iron.

In the treatment of this disease, or any other in which you desire to prescribe quinia and syrup ferri iod., you will find the following combination an excellent one:

℞ Quiniæ sulph..... 1.0
Syrupi ferri iodidi..... 8.0
Acidi citrici 0.5
Glycerinæ..... 8.0
Aq. anisi q. s. ad..... 50.0

M. Give a teaspoonful four times a day.

While you are improving the nutrition, and imparting tone and vigor to lowered innervation, do not neglect the application of some good stimulus to the skin. Apply friction, give baths, and use some of the soaps usually recommended in skin diseases, such as the carbolic acid or tar varieties.

We will give the patient before us the advantage of the treatment suggested, and try at some future time to again present her to the class, in order that you may note the result.

ARTICLE III.

A CASE OF FRACTURE OF THE CERVICAL SPINE. By OSCAR J. COSKERY, M.D., Prof. Surgery, College of Physicians and Surgeons, Baltimore, Md.

In the early part of June, 1880, there was brought into the City Hospital, Baltimore, Martin B., aged 19, a powerfully made Swede, who, in tarring the stay rope, fell to the deck of the vessel from a height of thirty-five feet, striking upon his head and shoulders. He was immediately gone to by his mates and was found completely insensible. The following was his condition at time of admission into hospital: Great swelling and ecchymosis of right upper eyelid, sub-conjunctival ecchymosis of right eyeball, *supra meridian*, a puffy swelling over right temporal region, a compound fracture of left thigh and several minor bruises and scratches upon the surface generally. The heat of skin was found to be very great, the thermometer indicating 105° and 106° in the axilla. The pulse was 110, respirations 15 and very slightly stertorous, and there was twitching of the depressor muscles of the lower jaw. The penis was markedly erected, standing at right angles to the body, and if pressed downwards, at once resuming the erect state when relieved from pressure. It was also retracted and measured one inch in length. The patient became more and more comatose, and died about eight hours after receiving the injury. The diagnosis made was: fracture of the anterior fossa of the base of the skull, with fracture of the spine in the lower cervical region.

On post-mortem examination there was found a large extravasation of blood in the substance of the right temporal muscle, a considerable effusion of blood over the right hemisphere of the brain (the source of which could not be discovered), but *no* fracture of the base as had been thought.

Besides this, there was fracture of the transverse process of the seventh cervical vertebra, allowing of some compression of the cord.

The only points of interest in this case are the length of time the patient lived after so severe an injury, the small length of the penis in the marked state of priapismus, the great heat of the skin, and the fact that the penis elongated after death to nearly two inches. It also illustrated the fact insisted upon by Hutchinson that great heat of skin with priapismus is a diagnostic sign of fracture of the lower portion of the cervical spine. I should mention that on account of the evidently dying state of the man, and the difficulty of turning him over, due to the fracture of the thigh, no examination was made of his back during life.

ARTICLE IV.

HYOSCYAMIA. By DANIEL R. BROWER, M.D.

This alkaloid of Hyoscyamus, which can now readily be obtained in a state of purity, is a valuable addition, made recently, to the armamentarium of the physician, containing, as it does, in small and agreeable compass the hypnotic, anodyne and anti-spasmodic properties of the bulky and disagreeable preparations of hyoscyamus. The pure alkaloid occurs in needle-shaped crystals, and is odorless. The taste is bitter. It is quite insoluble in cold water; easily soluble in hot water and alcohol, ether and chloroform. It has, in my experience, great value in the treatment of mania, delirium tremens and paralysis agitans. In the treatment of mania it is particularly useful, inasmuch as the dose is small and its taste can readily be concealed with coffee, tea, or milk, and therefore is readily administered to those patients who positively refuse all ordinary medication.

I have given the drug recently in three cases of puerperal mania, with the effect of promptly modifying the mentality, to such an extent as to make possible the use of ordinary treatment. The preparation used was Merck's crystalized alkaloid, and the dose found effective much smaller than that recommended by recent writers; the one-thirtieth of a grain has been the ordinary dose employed. This dose has invariably produced mydriasis, and dryness of mouth and throat.

In the case of Mrs. B., suffering with puerperal mania, who was persistently refusing food and medicine, and at times quite violent in manner, the drug produced a marked change in mental condition. The violence gave place to calmness, and the desire for food returned. It did not, however, produce sleep, but advantage was taken of the pacification to administer by rectum a full dose (40 grains) of chloral hydrate, which was promptly followed by a long sleep and marked improvement in mentality. In about twenty-four hours after this there was evidence of the approach of another paroxysm of mania, which was arrested by the same method. The drug was then continued for several days, in doses just sufficient to produce a mild effect upon the pupil, the chloral injection given at bed time, and an abundance of milk and other nutritious food administered. The patient made a good recovery.

CASE II.—Mrs. N., a case of puerperal mania, complicated with metro-peritonitis. She had for twenty-four hours refused all food and medicine, and was found to be in a state of wild excitement. She was ordered hyoscyamia in one-thirtieth grain doses every four hours, and shortly after the third dose was administered she was found to be perfectly passive in mind and body, and took food without difficulty. She then received a forty-grain rectal injection of chloral, with forty minims of tinctura opii deodorata. This was followed by a profound sleep, from which she awoke with improvement in mental condition. The hyoscyamia was continued at longer intervals and tinctura opii deodorata used by rectal injection in sufficient doses to subdue the pain of the pelvic inflammation. The mania subsided, but death ensued in the fifth week after parturition.

CASE III.—Mrs. P., a mild case of puerperal mania without

any pelvic complication, but like the other, refusing food and medicine. Hyoscyamia (1-30 grain) was administered in ice-water, and repeated in two hours in the same vehicle. In one hour after second dose muscular relaxation and pacification of mind were manifest, and very soon a profound sleep followed. The patient was continued under the influence of the drug for two weeks with a gradual subsidence of mental derangement and a restoration of general health.

My experience with the drug in delirium tremens is confined to a single case, in which there was marked cardiac irregularity and dyspnœa, so much so that I was afraid to administer chloral or the bromides. I gave this patient hyoscyamia in combination with digitalis in coffee, in the same dose above indicated, and closely watched the effect on the pulse. From a study of the physiological action of the mydriatic, I felt confidence in it as a respiratory and cardiac stimulant. The first dose had no effect upon the mental condition, but did improve the respiration and circulation. A second dose was administered in one hour, and was shortly followed by a subsidence of the excessive mental and muscular activity, sleep followed and a continuance of the treatment, giving just enough hyoscyamia to show its effects in a positive manner upon pupil, with liberal use of milk, beef tea and capsicum, resulted in restoration of patient, the result being in every way more favorable than opium, chloral or the bromides have ever produced in my experience.

In one case of paralysis agitans, the drug has served to diminish the tremor, and seemingly to arrest the progress of the disease. This patient is now taking about one-fortieth of a grain daily. This amount produced the characteristic pasty condition of the mouth, dilatation of the pupil and paralysis of accommodation. The one-twenty-fourth of a grain produced in this patient severe pains and spasmodic movements of the lower extremities, followed by complete muscular relaxation, and the effect on the eyes and the locomotion continued for forty-eight hours. The tremor is controlled by the drug very markedly, but there has been no permanent improvement. When he omits the drug for two or three days the disease shows itself with all its former intensity. The relief the remedy gives to the tremor without in any way disturbing the general system, except so far as the ocular phe-

nomena are concerned, renders the drug exceedingly acceptable to him.

I have also found the drug of benefit in cholera, but, so far, am unable to say how far its influence is curative. It has been given with tonics, with stimulants, and with anti-rheumatics, but if the theory be correct that this disease is usually the result of congestive hyperæmia of the motor centers, we can see how it must produce good results.

As I said in the beginning, the great value of the drug consists in its furnishing, in a small compass, a powerful agent for overcoming the cerebral irritability and hyperæmia of mania, and is an agent that can, usually, be administered without the knowledge of the patient. Moreover, my experience with the drug, that is with Merck's crystalized alkaloid, would lead me to apprehend fatal results from the administration of one-half or one-quarter grain doses.

ARTICLE V.

LABORATORY OF THE HEALTH DEPARTMENT,

CHICAGO, August 3, 1880.

OSCAR C. DEWOLF, A. M., M. D.,

Commissioner of Health,

DEAR SIR:—I have made a very careful and elaborate chemical examination of twenty-seven samples of baking powders received from you through the hands of Mr. Merki, your clerk, and have the honor to report as follows:

Many manufacturers have expended large sums of money and a great deal of time, attention, etc., to make up what they term a "good formula." It would not be fair to them, nor do I think it the place of this department to publish a complete analysis of of each and every baking powder. What is necessary is simply to point out, are there any, and if so, what materials contained therein deleterious to the health of the community?

I here place a table of figures and shall explain them below:

No.	Name.	Soluble Ash.	Insoluble Ash.	Total Ash.	
1.	Silver	22.00	0.02	22.02	Ca.
2.	Perfection	39.00	0.06	39.06	1st.
3.	American	24.06	0.10	24.16	Ca.
4.	Chartres	18.52	0.02	18.54	Al.
5.	Standard, Thompson & Taylor	29.44	0.30	29.74	1st.
6.	Gillett's Yeast	30.68	0.12	30.80	Ca.
7.	Gillett's Cream	31.74	0.08	31.82	1st.
8.	Dr. Price's Cream	36.18	0.12	36.30	1st.
9.	Loyal	18.56	1.04	19.60	1st.
10.	Anchor	30.78	1.28	32.06	Al.
11.	Standard, St. Bernard Mills	31.52	0.48	32.00	Ca.
12.	Sterling	29.60	0.20	29.80	1st.
13.	Sherman's Pure	33.84	0.08	33.92	1st.
14.	Empress	22.70	0.60	23.30	Al.
15.	Union Mills	40.54	0.16	40.70	1st.
16.	Cottage	35.86	0.08	35.94	1st.
17.	Royal	36.10	0.12	36.22	1st.
18.	Reliable	27.00	0.60	27.60	Al.
19.	Chapman's	18.92	0.24	19.16	Al.
20.	Giant	20.06	0.34	20.40	Al.
21.	Manuf'd in bulk, by Union Mills	22.62	0.66	23.28	Al.
22.	Meeches'	22.08	0.28	22.36	Ca.
23.	Success	26.28	0.12	26.40	Al.
24.	Golden Harp	19.20	1.70	20.90	1st.
25.	Star Chemical Works	35.02	2.32	37.34	1st.
26.	Peerless	19.96	2.40	22.36	1st.
27.	Manuf'd in bulk, by Star Chemical Works	26.92	0.24	27.16	Al.

A known and weighed quantity of baking powder was incinerated in a silver crucible until only a gray residue was left; this is the total ash. It was carefully removed to a glass vessel and acted upon by by hydrochloric acid and distilled water at the boiling point; what dissolved in that menstruum has been called soluble ash; that which did not, insoluble ash. From the above table it will be noticed that the insoluble ash is comparatively small excepting in Nos. 9, 10, 24, 25 and 26. It may fairly be assumed that that amount of the baking powder will not be dissolved by the juices of the stomach and may therefore be quoted as objectionable in these samples.

There are really four kinds of baking powder in the market.

1st. One composed of cream of tartar and bicarbonate of soda, or, what is essentially the same, of cream of tartar, bicarbonate of soda with some wheat or rice starch. The starch is added in order to keep the other ingredients apart and prevent their reacting upon one another until required to do so. The result of kneading such powders with flour and water is the production

of carbonic acid gas and a nice light porous bread. In baking in the oven a second portion of carbonic acid gas may be given off from the decomposition of the tartaric acid of the cream of tartar. Those marked first (1st) on the above table belong to this class.

2nd. One manufactured from meal and pressed yeast dried together. This would of necessity make an excellent baking powder were it not that it does not keep well for any length of time especially in warm weather. None of those samples I have received from you have been made of such materials.

3d. Another class is made from the acid phosphate of calcium and bicarbonate of soda with flour or some kind of starch. It is well known that the central portion of the kernel of all cereals contains almost pure starch; that is to say that it has almost no nitrogenous matter, moisture nor ash with it. The external part, that immediately under the husk—is, however, rich in nitrogen and phosphates. The former (nitrogen) is the characteristic ingredient of the gluten which imparts the yellow to brown tint of flour. That color some consider objectionable. The phosphates are the bone producing constituents of the flour and this class of baking powders proposes to rectify the insalubrity of the pure white or highest grade flours. It is necessary to keep in mind that no one can live on a purely starch diet alone but that in order to form all the various tissues of the body a variety of substances is required. This is very clearly demonstrated by the fact that unbolted wheat is very much more nutritious than the finest white flour. Under the next class I shall again refer to this. The baking powders of this—the third-class serve the purposes for which they are intended remarkably well. The acid calcic phosphate itself is soluble in water; any changes which may occur to it in the process of firing and kneading will not render it insoluble in the gastric juice; it will therefore in time fulfill all that is required of it.*

4th. The next class of baking powders is that in which the ingredients are alum, and bicarbonate of soda, or alum, bicarbonate of soda and starch or flour of some kind. The addition of

* Those marked Ca. on the table belong to the 3rd-class.

starch in this case is for the same reason as in the others and cannot be objected to unless where an excessive amount is used. With regard to alum baking powders there seems to be a great variety of opinion. Why there should be I cannot see. The addition of alum to flour in the presence of water will render the albuminous (flesh forming) constituents thereof insoluble. Does not that as well deteriorate the value of the flour as cause the stomach and intestines an amount of labor to turn over and get rid of useless material? Yet you will say, "Do not these albuminous substances cause the yellow tint of the flour and bread?" Certainly they do, as I have mentioned under 3rd class, yet their usefulness vastly overbalances their objectionableness in color. I cannot do better than incorporate here the opinion of Dr. Hassall of London on the use of alum in bread as I entirely concur in all he says on this subject, "The use of *alum* in bread is *particularly injurious*. It is true that it causes the bread to be whiter than it would be otherwise; indeed whiter than it was ever intended to be by nature; but it imparts to bread several other properties: thus it hardens the nutritious constituent of the bread, the gluten, and so, on the authority of the great chemist, Liebig, renders the bread more indigestible; it enables the baker to adulturate his bread with greater quantities of rice and potatoes than he could otherwise employ; and lastly, by the use of alum he is able to pass off an inferior, and even a damaged flour, for one of superior quality. Is it worth while to injure the properties of the bread by using alum for the sake of obtaining an unnaturally white loaf? The public then, in judging of the quality of the bread by its color—by its whiteness—commits a most serious mistake; there is little or no connection between color and quality; in fact, very generally, the whitest breads are the most adulturated. The public, therefore, should lose no time in correcting its judgment on this point.

The outer part of the grain of wheat has been proven by analysis to be much richer in nourishing principles, in gluten and in oily matter especially, than the central and more floury parts of the grain. Now, in preparing the finer descriptions of flour, the utmost pains are taken to separate this highly nutritious exterior portion of the grain, and thus, although the flour so

obtained is very fine and white—very suitable for making a white loaf, that fallacious test of quality—it is yet not nearly so nutritious as whole meal flour, or even the less finely dressed qualities of wheat flour. The consumer, now better instructed, is in a position to judge of how much he sacrifices for the mere sake of an arbritary and fallacious standard of quality, namely whiteness. The difference in nourishing properties between whole meal flour and finely dressed flour amounts in many cases to fully one-third.

Further, alum is very apt to disorder the stomach, and to occasion acidity and dyspepsia. The manner in which it does so has not been clearly ascertained. The powerful effects of alum as an astringent when administered as a medicine, are well known; but when added to flour or bread, it becomes decomposed, sulphate of potash, an aperient salt being formed.

Liebig considers that part of the beneficial action of wheat flour on the system is due to the soluble phosphates which it contains in such large quantities, and he states that when alum is added to bread these are decomposed, the phosphoric acid of the phosphates uniting with the alumina of the alum, and that thus an insoluble phosphate of alumina is formed, and the beneficial action of the phosphates consequently lost to the system. So satisfied is Liebig that this is the case, that he has recommended the employment of small quantities of lime water for the purpose of whitening bread made from musty or damaged flour. Enough has now been adduced to show that it is a very dangerous thing to tamper with articles of daily food and of large consumption, like flour and bread, by the addition of chemical substances of any kind."—*Hassall, food and its adulterations.*

I have carefully examined these samples for the presence of highly dangerous or poisonous metals and find them all to be perfectly free therefrom. The only objectionable metal to be found in them is alum as under class 4. These have been distinguished in the above table by the letters Al.

Upon the whole, I believe in the use of baking powders, as manufacturers on the large scale can more readily secure pure ingredients and proper proportions than can private individuals

simply making a small quantity for their own use, or using the various ingredients seperately.

I should, on no account, however, permit the use of baking powders in which alum is one of the chief constituents.

Some of the above powders contain alum in small quantities but as a complete analysis has not been given it is not mentioned in the table. I have the honor to be, sir,

Yours very respectfully,

R. S. G. PATON,

Chemist of Health Department.

ARTICLE VI.

HOW TO FEED THE SICK. By E. ENGALS, M. D., Chicago.

Dr. Tanner's experiment of long abstinence from food has attracted much attention, and, judging from the tone of the daily press, I think the public deem it an idle and foolish exhibition, but in its scientific aspect it has great interest, and will doubtless be repeated by others, and we shall have champion fasters as we now have champion rowers and athletes of the diamond field and prize ring. From this we may come to give due weight to the capacity which the body has to feed upon itself, and this will lessen the fear that patients will starve, and will help us to wait patiently for physiological repair of pathological changes. It is often remarked that truth is apt to be midway between extremes; yet public opinion goes from one extreme to another, and though we are conscious of our liability to this fault, we are generally ready to follow the pendulum through the entire arc of its motion. Within my memory the common practice was to interdict even a cup of cold water from the parched lips of a fever patient famishing with thirst. After the favorable termination of a protracted disease, when the attenuated body was clamoring for nutrition to restore what had been lost, food would be withheld to a degree that much prolonged the period of convalescence. Then came a change, and the direction of all in authority was that the sick should be "fed well." This was called "supporting treatment,"

and as all knew that the body was sustained by nutrition, the practice strongly addressed itself to both public and professional favor. As a consequence patients who loathed even the thought of food and abhorred its sight, were compelled to take it in considerable quantities at frequent and stated intervals, as if it were a medicinal dose. Under such circumstances food is not well digested, but is partially decomposed in the alimentary canal, and some products of such decomposition may be taken up by the absorbents to poison the blood, and the debris while retained disturbs the whole system and is thrown off by the stomach and bowels with difficulty. In ordinary sickness it is best that the patient should order his own diet list, and for the physician to expunge from this what he judges may prove harmful. If the patient does not desire food it is generally better to leave him without it, and I can attest, from frequent observation, that this may be done with entire safety until a condition of extreme exhaustion has been reached, and even then, if the patient's desire for food does not return, stimulants are oftener indicated medicinally than nutrients. We should not forget that in sickness the digestive organs are enfeebled as well as the nervous and muscular, and their labors should be proportionately lightened. It is many years since I have seen a sick person injured from having taken too little food, while I have seen many who have suffered from taking too much.

WE hasten to correct an oversight that occurred in the last issue of the JOURNAL, in that we failed to give the credit of the admirable selection, "On the Summer Complaint of Infants," by J. Lewis Smith, M.D., to our valuable exchange, the *Medical News and Abstract.*

DR. J. N. HYDE of the editorial corps is absent, attending the meeting of the Dermatological society, and when he returns he will give our readers a full report of the meeting of that society.

DR. F. C. HOTZ, our old associate, has rendered us much assistance in making up this number of the JOURNAL.

Original Translations.

ARTICLE VII.

SOME OBSERVATIONS ON THE CUTANEOUS ERUPTIONS ATTENDING THE USE OF CHLORAL. By Mr. MAYOR, Interne des hôpiteaux. A Communication to the Clinical Society of Paris.

[Translated for THE CHICAGO MEDICAL JOURNAL AND EXAMINER by H. D. VALIN, M.D., Chicago.]

In 1874 we had, for the first time, an opportunity to observe a patient under the care of Prof. Vulpian, who presented every day, at about the same hour, a peculiar eruption on various parts of his body. Our Professor did not hesitate to refer these symptoms to the use of the remedy which formed the basis of the treatment, that is, chloral. Paulin (Eugene) came under the care of Dr. Vulpian at La Pitié in 1873, suffering very probably from transverse myelitis, but presenting somewhat peculiar phenomena. They were true tetaniform fits, with opisthotonus, emprosthotonus and trismus. These attacks, to which he is yet subject at times, although in a better condition now, were extremely frequent in 1874. We then used to give him repeated doses of chloral until he was relieved. In this manner he would take as much as fourteen grains of chloral in the twenty-four hours, and, during the following days, we had often to renew the administration of that medicine in smaller doses, whenever the patient presented some convulsive shakes or some contractions. It is in these conditions that the eruptions of which we will speak appeared.

We find on record, on June 16, the following facts: From the beginning of May, patient noticed on his hands and face the appearance of small red spots, fading away after half an hour. From

May 10th he had, every evening at about five, pricking of the face, the top of the hand, the wrists, the knees and the region of the sternum. Raspberry red spots would next appear on these parts, with fine elevations, the size of a millet-seed. These spots used to disappear at 8 p. m., but the next day one could see traces of them in the shape of a light erythema, accompanied with itching. During the eruption patient would feel oppressed, and the pulse was very rapid. On the evening of June 15, after patient had taken his fourth grain of chloral, he was taken with violent fits of coughing. His sputa was streaked with blood, and he vomited. The 16th, in the morning, same sputa. June 17th, two very marked eruptions, with cephalalgia, oppression and nausea, followed by sleep. At 5 p. m. new eruption, even considerable, consisting in some large spots on the knees, the legs and the feet, a patch on the right arm, and a few spots on the right side of the face. Simultaneously, considerable oppression and acceleration of the pulse (100).

Then we stopped the administration of chloral, notwithstanding which the eruptions, accompanied with dyspnœa, continued till June 20th. On the evening of that day there was some dyspnœa till 8, soon followed by the apparition of a single spot on the right wrist. June 21st, same hour, eruption more marked. During the last three weeks, daily epistaxis in small quantity.

About the middle of July he had to resume the chloral on account of a tetaniform attack; accordingly, the same cutaneous and respiratory symptoms appeared as early as the second day. An important thing to note is, that the man who had unilateral sweats confined to the left side of his body presented eruptive phenomena on both sides alike. The fact of a cutaneous eruption resulting from the use of chloral is nothing particularly new. According to Mr. Gubler* Wilkie Burmann has noticed the scarlatiniform rash, accompanied with inflammation of the mucous membranes. Schüle and Kirn also describe it. Other authors have observed purpura and uricaria, but in connection with signs of a high degree of poisoning. The orthopnœa has been noticed by several observes, among which Mr. Bordier.† More than one clinical observer could make similar observations.

---

*Gubler. Nouveaux commentaires du codex.

†*Journal de Therapeutique*, 1877.

But what strikes us is the course, almost always regular, of the symptoms in the cases which fell under our observation since. Here is a record of them:

CASE II. P. (Marie), aged 52, came under the care of Dr. Bernutz on account of a peculiar floating abdominal tumor, which a puncture showed to be probably an ovarian cyst. This puncture was made on March 17, and the patient, complaining of sleeplessness, she was administered two grains of chloral. On May 7, P. said that for the last three weeks she had had a rush of blood to her head, and palpitation with oppression every day after supper. These symptoms returned regularly till July 18, although they could not be accounted for by any morbid state of the heart or lungs, nor by the size of the cyst, which was punctured once more without changing in any degree the fits of oppression. But, as these became more intense and lasting, I observed one of them on July 18 at 5 p. m. The patient, who lay in the dorsal decubitus, was extremely oppressed, and her pulse was strong and frequent (100). The sounds of the heart were not disturbed. Patient was in such throes that she almost lost consciousness. Her eyes were half closed, and it was impossible to elicit an answer from her, even through signs; she did not seem to hear. Her respiration was labored, in the manner of some asthmatic patients during a fit of dyspnoea. Auscultating the chest revealed nothing abnormal, but a bright rosy mask covered all the face. On the arms, the forearms, the superior parts of the chest, the anterior parts of the knees, and the instep, bright rosy spots, irregular circular, slightly corrugated at the surface, not very elevated above the sound skin, but presenting sharp but somewhat sinuous edges appeared. The administration of chloral was immediately stopped.

The next day, July 19, the parts formerly occupied by the rash were the seat of a furfuraceous desquamation more marked in some places than in others.

July 23. This evening patient tried to eat a little, which she had not done, except in the morning, since her fit on the 18th.

As before, the meal brought the recurrence of the symptoms just described, which had not appeared for the last few days.

On August 2 patient left, without having been able to take

any meal in the evening since July 23. Neither the eruption nor the accompanying troublesome symptoms returned.

Two points in this case seem to us important: first, the evident relation of the appearance of the rash with the time of gastric digestion, and the absence of auscultative disturbances during the fit of dyspnœa.

CASE III.—X., aged 27, suffering from tuberculosis of the bronchial ganglia, with compression of the trachea and bronchi, came under the care of Dr. Le Dentu at St. Antoine.

On Feb. 10 the patient, who had been taking daily two grams of chloral at a dose for ten days, complained of flushing of the face, with increase of her habitual dyspnœa; and moreover, she noticed yesterday for the first time red patches on the extensor side of her forearms. These patches were the seat of some sharp itching; yet, this morning, there was no desquamation on these points. Chloral was discontinued.

Feb. 11, almost no remains of the sensation of warmth. Patient left for the Vesinet.

CASE IV.—L. (Fanny), aged 44, had been operated on for the removal of an epithelioma of the left breast, Feb. 13, by Dr. Le Dentu. During the following fortnight she did not take any chloral. She said, nevertheless, that she had some flushing of the face after meals.

On the evening of March 11 she took one gram of chloral hydrate. As early as the next day, after breakfast, a few red points broke out on the back of her right hand. On that evening (March 12), she took two grams of chloral.

March 13. Flushing of the face, without any dyspnœa yet. Following the redness of the face, redness on the whole of the inferior half of the right forearm and the back of the hand. Two grams of chloral in the evening.

March 14. After dinner, which is her chief meal, patient had flushing, with redness of the face and redness of the forearms, more marked on the right, and no itching. But, as she felt a little itching on the feet, she noticed small red points on their dorsal aspect.

She was taken at the same time with a peculiar uneasiness and some dyspnœa, with the sensation of a bolus in her throat. She

remained quiet, without uttering any word, nor did she lose consciousness, but she wept during half an hour. This woman had never shown any sign of hysteria. She took no chloral that night, and the next day there was redness of the face only; but as she resumed the remedy on the following day, in one to two gram doses every evening, the annoying symptoms returned, and on March 19 at noon, that is half an hour after meal, I could notice the following fact: her face was uniformly red, except the chin, above which the redness ended in a somewhat elevated border. There was no sharp edge elsewhere. On the back of the hand, skin glossy, but bright rose-colored. This hue, however, was not quite uniform. Three fingers'-breadth above the wrist the redness stopped in a sinuous border, not very distinct from the sound skin, for the hue faded as it receded from the wrist. The redness did not extend so high up on the left side, where it broke less rapidly. On the palm the redness was less intense, and did not ascend above the wrists. Slight rosy hue on the superior part of the chest, and very bright redness, without alteration of the surface of the skin, on both knees on the extensor side. The erythematous patches were wider than the hand in these places, and had no well-defined borders.

From the time the eruption appeared, there has been flushing of the face, with palpitation. The accelerated beats of the heart were so violent as to raise the shirt and the sheet. When I could examine the patient they were less violent, though very frequent (140). There was no alteration in the tone of the heart sounds, and no murmur. The dysponæa was hardly noticable. Chloral was discontinued.

March 20th.—Redness of face, slight palpitation. A few red spots on the top of the hand.

March 21st.—Some redness of face. No other symptom.

We will observe, respecting the patient, this fact alone: That the eruption constantly predominated on the right side; at least in regard to her arm. According to the patient, however, both her hands were a little clammy, and equally flabby. Should we then attribute this predominance to some slight injury to the nerves, caused by the fact of our reaching very deep into the axilla to remove a degenerated ganglion? Then we will observe

that we do not understand why the eruption did not appear on the internal surface of the arm, where sensitiveness was much diminished in the region of the accessions. There was not any disturbance of sensation any where else.

CASE V.—L. Fernelly was suffering from an abscess of the vulvo-vaginal gland and a sanguineous cyst of the true pelvis, which opened into the bladder. This patient came under the care of Dr. Le Dentu, Feb. 18. On March 30, she was ordered a dose containing two grains of chloral. Less than eight days after, although she had not taken the whole dose every day, as she declared, she was taken with flushing of the face and some palpitation after meals. These symptoms went on increasing gradually, and as early as April 10th the patient had palpitation, oppression, redness of the face, and an eruption on the back of the wrists, and the anterior surface of the knees. But there was at the same time some gastric disturbances. Accordingly, chloral was ordered in a rectal injection on April 12th, and three grains were thus given. On the 13th, 4 grains were given. The 14th 5 grains. On examining the eruption on that day, it had the following character: Patient was seized immediately after meals with a sense of weakness and dizziness; the blood rushed to her face, and at the same time she felt violent palpitation, with dyspepsia. Her face was almost entirely red, and the skin glossy. So were her neck and upper part of chest. The hue was equally bright rose colored without elevation of the skin on the palmar aspect of the hands and fingers, and the soles of the feet. But we could notice at the same time red spots with sinuous borders, and an irritated skin on the dorsal aspect of the wrists, of the elbows over the olecranon, on the tops of the feet and the instep—on the kness over the patella. There was not the slightest itching.

Her pupils seemed rather contracted during the crisis. At any rate they were not dilated. Auscultation revealed no abnormality of lungs. On account of the excessive pain which the patient felt on a line with the hypogastrium we had to continue the injections of chloral in 5 grain doses every day.

But on April 22d a new incident occurred. She showed signs of a much more profound degree of poisoning: Skin cold, hyperæsthetic region here and there (on the body, particularly the

back), marked pallor of face, extreme weakness and faintness, a tendency to syncope, dread of imminent death, and considerable dyspnœa without its being accounted for by any thoracic phenomena. Chloral was stopped accordingly for a few days, after which it was resumed on various occasions without it giving rise to any serious symptom.

We can see in this case that whatever the way in which chloral is administered it gives rise to the same symptoms; it is obvious that they do not depend on cardiac troubles resulting from the direct action of chloral on the stomach and the resulting dyspepsia.

Finally, I might cite the case of a patient under the care of Dr. Lancereaux, who was prevented from sleeping one night by a feeling of warmth, after she had been taking from two to five grains of chloral daily for eight days. This record, for which I am indebted to the good will of Mr. Dupont, out-door attendant, says that on the next morning the patient presented an almost universal eruption, consisting of rosy lichenous patches, which were the seat of severe itching. One might doubt, however, the nature of that eruption, as it disappeared completely in three days, after assuming a bronze hue, and did not return, although the chloral treatment was continued.

In all of these cases we see the chief features of chloral poisoning. The truth is that whenever a rather excessive dose of chloral is taken through accident, the patients are comatose, presenting at the same time a marked acceleration of the pulse, stertorous breathing and congestion of the integuments, particularly of the face and neck. It is only in a later stage that the pulse becomes less frequent, the face pale, and that the respiration finally grows slower, and even stops.

In our recorded cases, the symptoms appear in a determined order, so to speak, and present themselves with the features of a certain degree of regularity, at first the redness of the face following each meal, accompanied with a slight sensation of drowsiness and even sickness.

Soon the acceleration of the pulse is so marked as to become annoying. If the treatment is persevered in, to these symptoms, gradually increasing, is added dyspnœa, which was slightly no-

ticeable the preceding days, but which becomes so marked as to absorb the entire attention of patients, and be the cause of their complaints. Should we observe them at that point, we would notice that not the face alone is red, resembling wine dregs in color, but this tint extends over the neck, the palms of the hands and sometimes the soles of the feet. These red spots, more or less marked, are variable in extent, and appear with sinuous borders generally. In some places the patch slightly encroaches on the neighboring skin, presenting at the same time a granulated aspect; in other places it is glossy, but does not project. This eruption evidently has favorite seats: the back of the hand and wrist, the upper and front part of the chest, the articulations of the knee and of the elbow on the extensor side, the top of the foot and the instep. The eruption generally lasts but a short while—from half an hour to a few hours; it is often itchy. Last of all, we sometimes observe, on the following day, some slight scaly desquamation on the part which it has occupied.

This eruption is as remarkable on account of its time of appearance as for its objective symptoms. We see that it always returns immediately after a meal. The time at which the remedy is taken seems to us to have nothing to do with the time of the recurrence of the troublesome symptoms. These, we would repeat, are dyspnœa chiefly, and palpitation of the heart, which constantly precede or follow a return of the eruption. The accelerations of the pulse may attain 140. The pulse is strong and energetic.

This description establishes in nowise a resemblance between these eruptions, those that appear in the course of some grave diseases, and the exanthema of variola, rheumatism, diphtheria, etc. From their pathology we would even be more tempted to compare them with erythemas due to the administration of such medicines as arsenic, mercury and iodine. But the course of the eruptions caused by these, and their appearance itself, differentiate them well enough from those just described. The belladonna eruption even resembles them more by its appearance, as well as by some concomitant symptoms, viz.: the acceleration of the pulse. But as to the erythema caused by the oleo-resins, it strikes us with its analogy of seat and appearance to those de-

pending on chloral. Here is what Dr. Bazin says of the eruption caused by the oleo-resins:

"If the eruption breaks out slowly and in different places in succession, it is limited at first to various points which seem to constitute its various seats, such are the wrists, the malleoli, the knees, the hands and feet. It is also in these regions that it is the more marked through its course, and the more reluctant to fade. In other cases the exanthem is developed in a brisk and lively manner, invading all the integuments at once, when it is generally accompanied with febrile symptoms of a greater or lesser intensity.

"The roseola caused by the oleo-resins generally breaks out as red or rosy spots, unequally elevated, round or irregular at the edge, without any projecting part, and fading away under the pressure of the finger; some remain small and isolated; others are so confluent as to give to the skin an almost uniform redness. These spots, more or less confined to the regions alluded to at first, have but an ephemeral existence of themselves, and fade almost as soon as the use of the drugs is stopped. In case these are continued, it generally extends and pervades the whole surface of the body. The itching, very moderate at first, becomes very painful and at times intolerable. The eruption may undergo at the same time important modifications in its aspects and character, the elements of which they consist losing their appearance of simple maculæ to rise above the skin, and become true papules, appreciable by the finger and eye. This phenomena is more especially observed in the favorite places, in which large red patches are found, terminating at the edge in a sort of wavy and projecting bunch."

What is the mechanism of the eruption excited by chloral? Shall we admit here what Mr. Bazin affirms of copaiba, a direct action of chloral as it is eliminated by the cutaneous glands? Indeed, we know that it is generally admitted that this medicine, which is certainly eliminated in part by the lungs and by the renal secretion, is likewise eliminated by the sudoriparous glands. But we may answer to this that the patient who was the subject of our first observations had profuse perspirations, confined to the left side, and that he had nevertheless a bilateral eruption.

Should we refer it preferably to vascular troubles? Says Prof. Vulpian, in his lecture: "The action of chloral on the vaso-motors is plain. The vessels of the web of a frog's foot are dilated, and all the mucous membranes in the mammiferæ are congested during the sleep induced by chloral. Although the eruption is accompanied by marked irregularities in the beats of the heart, yet we must say that clinical studies do not furnish very satisfactory explanations on that point.

CAUSES OF SICKNESS IN MICHIGAN.—Reports to the State Board of Health, Lansing, for the week ending July 17, 1880, by sixty-five observers of diseases in different parts of the State, show causes of sickness as follows:

DISEASES OBSERVED.	BY OBSERVERS.		DISEASES OBSERVED.	BY OBSERVERS.	
	Number.	*Per cent.*		*Number.*	*Per cent.*
Asthma	1	2	Fever, intermittent	58	89
Brain, inflammation of	3	5	Fever, remittent	38	58
Bowels, inflammation of	13	20	Fever, typhoid (enteric)	7	11
Bronchitis	27	42	Fever, typho-malarial	13	20
Cerebro-spinal meningitis	1	2	Influenza	8	12
Cholera infantum	31	48	Liver, inflammation of	1	2
Cholera morbus	46	71	Measles	14	22
Colic	1	2	Neuralgia	35	54
Consumption, pulmonary	42	65	Pneumonia	11	17
Croup, membraneous	0	0	Puerperal fever	4	6
Diphtheria	17	26	Rheumatism	36	60
Diarrhœa	57	88	Scarlatina	6	9
Dysentery	25	38	Small-pox	0	0
Erysipelas	15	23	Tonsilitis	17	26
Eyes, inflammation of	1	2	Whooping-cough	27	42

By the last column it will be seen that the most widely distributed disease was intermittent fever (ague); next to that, diarrhœa; next to that, cholera morbus; no cases of small-pox; scarlet fever in only nine per cent. of the localities.

HENRY B. BAKER,
Secretary State Board of Health.

Foreign Correspondence.

ARTICLE VIII.

Messrs. Editors:—The problem, "What is malaria?" has not only a scientific interest, but, at least for Italy, is also a social problem of the greatest importance. There is no one who does not see, especially in Rome, the truth of this assertion. Great studies regarding this subject have recently been made by Prof. Tomasi Crudeli, of Rome; and here I shall briefly communicate some points of his paper read before the medical society a few months ago. He first occupied himself with the importance of the problem; he noted that the means used to destroy the nascent powers of this morbid agent did not have any other object except to remove one or more of those factors that experience has demonstrated necessary to the development of malaria, as are: 1st, A very elevated temperature; 2d, a persistent humidity of the soil; 3d, the access of air as far as the damp layers of the soil. These methods may limitate or temporarily stop the nascent action of the malarious places, but do not destroy "that particular aptitude of malarious grounds, that constitute the essential difference between them and those grounds, that notwithstanding they have the same composition and may be put in the same exterior condition, are not capable of generating malaria." So he demonstrated how those places where were used the proper beneficial means have been free for many years of malaria, and now were again infected, when these conditions that opposed to its development were ceased. According to the illustrious professor is valued the presumption that the cause of malaria consists in little solid bodies of little specific weight contained in the soil, which are capable of reproducing themselves ad infinitum, when they find all the conditions

favorable to their development; that they are living organisms; but to show undoubtedly the parasitic origin of the malarious infection, he admits that necessarily must be proven: 1st, the constant presence of a determined organic species in the various qualities of malarious grounds, and in the air above the same; 2d, that the organic species must be able alone, that is without interferment of any other morbific agent, to generate a true specific intermittent fever. Regarding this object he has made many experiments with Prof. Klebs, of Vienna, and they consist in gathering air and soil of these malarious places, in examining these samples by the microscope, determining the various organic forms that are found, submit this material to liquids to obtain in these the predominance of one of these multiples living elements that existed in the air or in the soil and finally inject these liquids under the skin of rabbits. In this manner they have been able to obtain paroxysms of malarious intermittent fever by the use of one of these liquids containing in great abundance forms of "schizomiceti" pertaining to the gender Bacillus, a form that they consider as the excitant of the malarious infection, and call it "Bacillus malariae." What authorizes the experimenters to attribute the morbigenous action shown by the liquid, to those above described organic forms, is especially the counterproof that taken away by filtering the solid little bodies from the infectant liquid, this looses a great portion of its morbiferous potency. If the results obtained in these researches will be confirmed by new experiments made by the same experimenters and by persons competent as them, the modern experimental pathology can pride itself of one of the greatest discoveries that have been made at our time. I hope that the Prof. Tommaji and Klebs will not abandon this argument of study, and also I hope that if the science will recognize in this microscopical vegetable the ultimate cause of the malarious infection, will know also in future to give us the means for its destruction.

At last during last year has been added to the faculty of medicine, at Genoa, a professorship of dermatology. Not only in Genoa but also in all other universities of Italy the study of skin diseases has stepped forward as one of the leading branches taught. The clinic at Genoa is conducted by Prof. Campana, a very skillful

diagnostician and practitioner. Last year the clinic, although in its beginning, has constantly been attended by many patients, and the labors of the professor in working it up have been crowned with the happiest success. In this clinic I have chiefly noted the use and action of the powder of Goa, which is obtained by pounding the woods of various Indian trees, which are known by those natives by the name of Araroba, or Aroriba in their tongue, meaning yellow taint, consisting chiefly in its totality of crysophanic acid, and to this is due its action. The ointment of crysophanic acid is prepared by dissolving it first in benzine and then mixing it with fat in the proportion ten parts to forty of lard; to prevent the erythema and in the face the erysipelas and œdema of the eyelids, Dr. Scarenzio has advised to apply around the limits of the affected part a layer of collodion, so as to circumscribe the erythema; this method very often succeeds, but may also fail. Not wishing to be too tedious in naming all the affections where it was used, I will only say: 1st. That the crysophanic acid is an excellent remedy in psoriasis, where, according to my observations, may prove useful, also in forms more difficult to be cured by this remedy, according to others (psoriasis guttata). 2d. That it is of utility in producing absorption of the papulo—hypertrophic syphiloderma, tubercula hypertrophic; the hypertrophy of the lupoid nodules; also without provoking solution of continuity of the superficies, especially if coajuvated by the precedent abrasion. 3d. That in lepra, produces absorption of the tubercles and of the macula infiltrations. 4th. That it is logic to conclude that this remedy cannot protect against relapses. 5th. That the rapid absorption of the nodules and leprous infiltrations does not facilitate the eruption of new manifestations, nor does it disturb the general condition. 6th. That in lepra may be noted facts of alterated thermogenesis, with relative increase of temperature in the affected part, an increase that sometimes seems to involve also the sound superficies contiguous the same side of the affected territory. The tincture of tayuya has been, during the past years, grandly lauded by some as the great specific in syphilis. In this clinic it had its trials, and I will say more than it ought to have had; no good effects could be gotten and was finally banished from the clinic as the remedy in syphilis. The tayuya

did not at all respond to the clamor made by somebody. Not only is it behind, according to Dr. Geber, a thousand miles to the potassic iodide and mercury, but is inferior to those syphilitic remedies that the physicians of our day make use of, because of middling efficacy.

I must refer before I close to a pathognomonic symptom, very little known in the fracture of the neck of the femur. It is a traditional practice in this hospital, to explore, whenever the fracture is suspected, the small space that is found between the trochanter and the crest of the ilium. In placing the two extremities in the same position, instead of the considerable resistance given in the sound limb by the tension of the extensor muscle of the fascia lata, and of the gluteus medius, a deep hollowness is found in the affected limb, due certainly to the diminished tension of the above named muscles by the approaches of their points of attachment.

A. LAGORIO, M. D.

CHIAVARI, Italy, July 14, 1880.

ETIOLOGY AND PROPHYLAXIS OF PREMATURE BALDNESS. (*Revue Méd.* No. 22, 1880.)

According to Dr. Ellinger water and the regular use of ablutions of the scalp are the principal factors of premature baldness. In 100 individuals troubled with alopecia 85 used ablutions of the head since early youth; and among those who had preserved a luxuriant head of hair to an advanced age eight per cent. only had this habit. At the point of implantation of the hairs, the water forms with the epidermic layers and the sebaceous matter of the hair, an emulsion, an oil which concretes and obstructs the hair follicles which lead first to their distension, then to their atrophy.

M. Ellinger thinks a well performed mechanical cleansing, with sand or a wire brush, is not only the most sure means of prevention, but even a good curative for the fall of hair at the commencement.

Reviews and Book Notices.

Article IX.—Guy's Hospital Reports. Edited by H. G. Howse, M.S., and Frederick Taylor, M.D. Third Series, vol. xxiv, 1879. J. & A. Churchill, London.

Guy's Hospital Reports need no introduction to the readers of any medical journal in the world. We have before us the 24th volume of the third series, a book of 496 pages, made up of twenty different articles, illustrated by nine plates and several wood cuts.

While we have neither time nor space for an exhaustive review of this most valuable "Report," we cannot lay it aside without calling attention to two papers which are alike remarkable for their originality and ability. We refer to "Art. XII, Constructive Inflammation and Ulcers; by C. H. Golding-Bird, B.A., M.B.," and "Art. XVII, Some of the Clinical Aspects of Chronic Bright's Disease; by F. A. Mahomed, M.D.

Article XII, by Golding-Bird, is richly worth a careful study by every student of pathology. It is an admirable exposition of what is at present known concerning the differentiation of protoplasm in "constructive inflammation," as it is seen in the repair of ulcers. Dr. Bird is evidently a biologist as well as a surgeon, and he handles his subject from the broad standpoint of one who is thoroughly acquainted with the laws of cell development. He regards, and very justly according to our way of thinking, "constructive inflammation," as essentially a "local living of embryonic life over again, a recommencement of evolution from a nucleated mass of protoplasm." And he immediately adds, "in this sense constructive inflammation or repair becomes a physiological rather than a pathological process." These two brief

sentences indicate essentially what may be called the biology of the process of repair, excluding of course the process of "immediate union," which is so exceeedingly rare that many surgeons deny its existence, and many others confound it with "union by first intention."

"In tracing out briefly the steps that occur in repair," says Mr. Golding-Bird, "it will be shown how exactly in detail they are the repetitions of early development, and in this sense also physiological."

The relations existing between embryonic development and the cell-differentiations of repair, are stated as follows:

"The blastoderm cells in the ovum, or the earliest cells of the embryo—hence called the embryo cells—are simple nucleated protoplasmic spheres or cells, capable of amœboid movements (Embryonic tissue).

"Later on, by these movements they acquire branches, and these unite into a tissue (Granulation tissue).

"Still later, this last becomes differentiated into fibrous tissue (Cicatricial tissue).

"All these conditions may be traced in the fully formed animal, in the constructive inflammatory process; its very existence depends upon their fulfillment."

We have not seen the broad principle that reparative processes in the adult are but the essential equivalent of embryonic cell-development; that cell-growth is cell-growth everywhere and always; that all cell multiplication and cell differentiation in the adult and in the embryo, are essentially one; that constructive growth in the adult is but the repetition of constructive growth in the ovum, so clearly stated before. Nevertheless, we have *taught* this doctrine for nearly ten years, not only with respect to so-called "constructive inflammations," but also in in relation to other processes which are classed as "pathological." To a very much greater extent than our text books indicate are "pathology" and "physiology" identical; to a very much greater extent than appears on the surface are the processes of embryological growth repeated in the adult body, both "physiologically" and "pathologically." Hence we have for years past urged upon students

the importance of understanding the history of development as it is seen in the ovum.

Mr. Golding-Bird has some peculiar notions respecting the pus-corpuscle, and they are worth examining. In order to make his meaning clear we are compelled to quote somewhat at length.

"Although," says the author, "the name 'pus-corpuscle' has been given as synonymous with embryo cell, yet as a pus cell it requires here, more from its clinical than its histological aspects, some further and special mention. Microscopically there is no distinction between the pus cell and those with which it has been classed. The embryo-cell contains one or more (usually four) nuclei, whether it be taken from the tissues or immediately from the blood, although it requires generally the addition of acetic acid to exhibit them. *The pus-corpuscle has always four nuclei, hence it is the same as saying that the pus-corpuscle is only a four-nucleated embryo-cell.*

"To the surgeon the pus cell is a cast off and dead element; and as we see it with the naked eye so it is, but in situations only penetrable by the microscope, *it is a living entity, and enjoying all the amœboid and locomotive characters of the one-nucleated cell.* (The italics are our own.) But why should the pus-cell contain four nuclei? Or why should pus—clinical pus that is—be composed solely of four-nucleated cells?

"Clinical observation here assists the histological, and if the answer to be given does not explain why a healthy white blood corpuscle may have four nuclei, it is yet amply sufficient for the subject under consideration. When a protoplasmic cell divides, the process commences in the nucleus, hence an embryo-cell (pus) that contains four nuclei may be regarded as one in which multiplication has been checked at the first stage. Through lack of nutrition there is not sufficient energy on the one hand, nor protoplasm on the other, to complete the process, though in all other respects the cell retains its vital functions. The general state of health, as well as local conditions, therefore, may be expected to influence the amount of pus, and this every surgeon knows to be the case; pus in excess meaning nutrition so perverted that a greater or less amount of protoplasm is no longer

able to be fixed in the tissues, and is therefore thrown off and lost."

According to our observation, although the pus cell frequently contains four nuclei, it is by no means an invariable rule. Very many pus cells never get beyond being "nuclei," biologically considered, yet they are potentially "pus" cells. There is really no fixed and unalterable law governing the development of pus cells; hence there can be no invariable rule as to the number of their nuclei. Mr. Golding-Bird's explanation of the presence of four nuclei in pus cells seems to us exactly no explanation at all. In fact it utterly fails to explain what is perhaps the most common mode of the development of pus cells, in the early stage of suppuration, in acute parachymatous inflammations, namely, by budding or "gemmation."

The remainder of this interesting paper is devoted to the discussion of "granulation tissue and granulations," "epitheliation" and the "pathology of granulation tissue," and each one of these subjects is handled with marked ability. We cannot agree with the author that "epithelial cells are developed from the embryo cells of the granulation tissue," but rather that they are developed from the bioplasts of previously existing epithelial cells; that is, we are strongly inclined to believe that the "doctrine of epithelium from epithelium" is the true doctrine after all. While we notice nothing in either of these three concluding sections which merits especial commendation or invites criticism, we take pleasure in advising every student of pathology to read carefully and thoughtfully the entire essay upon "Constructive Inflammation and Ulcers," with the assurance that it will be found equally pleasant and profitable. I. N. D.

ARTICLE X.—BRAINWORK AND OVERWORK. By Dr. H. C. Wood, Clinical Professor of Nervous Diseases in the University of Pennsylvania. Philadelphia: P. Blakiston; 1880.

This book is worth reading carefully. In the second chapter of the work the author considers the causes of nervous diseases. "Bad food, bad water, habitual filth, and living in badly ventilated, damp or dark houses," are among the etiological forces behind many nervous and brain disorders.

Dr. Wood divides the causes of nervous diseases into two great classes, viz: exposure and dissipation. In considering the influence of hard work as a cause of nervous trouble, the author records it as his firm belief that this factor is greatly overestimated. There are a few pages (commencing with the fiftieth) of great interest, in which the author discusses the manner in which mental labor affects the brain. Chapter IV is devoted to the discussion of "Rest in Labor." Chapters V and VI to "Rest in Recreation and Sleep."

The book, written in a pleasing style, free from technicalities, is one which will interest the general reader and contains in its 125 pages a large amount of information upon several important themes.

There seems to be a desire, upon the part of the writer, to impress the fact on every reader of the book that hard work, in certain limits, is not only not hurtful but necessary to health; and that on the contrary, worry and waste of nervous and physical forces are deadly foes to health. The chapters are too short to give a satisfactory discussion of their several titles, but the intelligent reader can glean much useful information from the book.

B. W. G.

ARTICLE XI.—OBSERVATIONS ON FATTY HEART. By Henry Kennedy, A.B., M.B., Univ. Dublin; Fellow of the King and Queen's College of Physicians in Ireland; Physician to Simpson's Hospital, etc. Dublin: Fannning & Co.; 1880.

This is a small volume of 171 pages, treating of the morbid etiology, anatomy, symptoms and diagnosis, prognosis and treatment of fatty heart.

The author recognizes two varieties of this affection, both of which he believes dependent on a fatty diathesis and the manifestations of a general disease rather than a local disorder.

The subject is quite thoroughly considered, and whatever clinicians may think of the author's propositions, they are certainly of great interest and merit careful consideration.

In the diagnosis of fatty deposit on the heart the main reliance is placed on: 1st, a slow, full pulse; 2nd, enlargement of the area of cardiac dullness; 3d, the fact of the individual being

fleshy; and 4th, a soft soufflet with the first sound of the heart in the aortic area whenever the valves are affected.

In the diagnosis of the fatty degeneration of the muscular fibers of the organ he relies mainly on: 1st, a slow pulse, often less than 50 per minute; 2d, weak impulse of the heart apex; and 3d, weakness of the heart sounds, the organ meanwhile retaining its normal size.

The only other disease causing these two latter signs are pericarditis and dilatation of the heart, but in both these there is an increased area of dullness and a more or less rapid pulse. In rare instances the heart-sounds in fatty degeneration are distinct and rapid, but they then have a metallic quality and seem distant like the fœtal heart.

The nervous and other symptoms attending these two varieties are much alike and are always of importance in forming a diagnosis. The principal of these are dispnœa, loss of strength, flabby condition of the muscles, uneasiness or pain in the region of the heart or diaphragm, hesitating or slow speech, and not infrequently pseudo-apoplexy, in which the patient, without any warning, falls as though shot and presents, in more or less perfection, the ordinary symptoms of apoplexy, the characteristic feature being that the loss of consciousness or paralysis are only temporary; at first usually disappearing in a few moments, and later after, at most, an interval of a few days.

The book is well worth the careful perusal of every practitioner as it deals with a subject too litte understood and especially with a diagnosis which is not usually made until the autopsy. E. F. I.

ARTICLE XII.—OUR HOMES. By Henry Hartshorne, A.M., M.D., Formerly Professor of Hygiene in the University of Pensylvania, etc., etc. Philadelphia: Presley Blakiston, 1012 Walnut St.; 1880.

This book is one of the series of American Health Primers published by the enterprising Philadelphia house whose name appears above. The author of the book is an eminent authority upon the subject about which he writes.

Dr. Hartshorne has given to the public, in a concise, condensed and practical form, the results of his thought (as well as that of

others) upon a very important topic. It is no less important a theme than that of the situation, construction, ventilation, lighting, warming and drainage of dwelling houses.

Preventive medicine must, as the masses become more intelligent, become an important factor in medical literature. It is of great consequence to know how to prevent disease. There is no doubt that a large percentage of disease and death grows out of utter ignorance in regard to the laws of health. This being so, hygiene is an all-important department of medicine. The writer has made no pretense of producing an elaborate and exhaustive treatise on the subjects which he introduces. He has, the rather, condensed and sifted the literature which has been written upon these topics; and, as a result, has made a book, which, while it is instructive and interesting, is not dull nor burdened with unimportant facts. The book is a résumé of the writings of English, German, and American authors on Hygiene. It touches only the salient points of the subject which it discusses.

The chapter on the situation of dwellings contains some suggestive remarks. The dangers from malaria, carbonic acid gas, surface defilement, etc., are strongly set forth. The faulty construction of houses is asserted to be, in many instances, a fruitful cause of disease.

The author quotes experiments from the eminent Bavarian experimenter, Prof. Pettenkofer, which show how ground air is brought into dwelling houses and becomes an invisible and unsuspected foe to health and comfort. The use of wall papers containing arsenic is condemned in vigorous terms.

The subject of drainage, to which the writer devotes the longest chapter in the book, is presented more fully and elaborately than any of the other topics, which, taken together, form the book. This chapter contains quite a detailed account of different systems of plumbing and draining, and the reader can glean from it, by a careful perusal, all the really important points relating to the subject of drainage. There are, of course, other and more elaborate works, which treat this subject exhaustively. In short, this book is suggestive rather than exhaustive, brief and to the point, fully up to the times, and will repay a careful reading.

B. W. G.

BOOKS AND PAMPHLETS RECEIVED.

Pathogenetic Outlines of Homœopathic Drugs. By Carl Meingke, M.D.

Sea Air and Sea Bathing. By J. H. Packard, M.D. Philadelphia: P. Blakiston; 1880.

A Text Book of Physiology. By M. Foster, M.D., F.R.S. Philadelphia: H. C. Lea's Son & Co.; 1880.

The Black Arts in Medicine. By Jno. D. Jackson, M.D. Cincinnati: R. Clarke & Co.; 1880.

Clinical Treatise on Diseases of Nervous System. By M. Rosenthal, Vienna. Vol. II. New York: Wm. Wood & Co.; 1879.

The Practitioner's Reference Book. By R. J. Dunglison, M.D. Lindsay & Blakiston, Philadelphia; 1880.

Transactions American Gynæcological Society. Vol. IV, for year 1879. Boston: Houghton, Mifflin & Co.; 1880.

A Guide to the Practical Examination of Urine. By James Tyson, M.D. Philadelphia: Lindsay & Blakiston; 1880.

Health and Healthy Homes. By Geo. A. Wilson, M.D. Philadelphia: Lindsay & Blakiston; 1880.

Lessons in Gynæcology. By Wm. Goodell, M.D. Philadelphia: D. G. Brinton; 1880.

Transactions Indiana State Medical Society for 1880. Thirtieth Annual Session. Carlon & Hallenbeck, Indianapolis; 1880.

The Female Pelvic Organs. By H. Savage, M.D., London. New York: Wm. Wood & Co.; 1880.

Report of Michigan State Board of Health for year 1879. Lansing, Michigan; 1880.

Naso-Pharyngeal Catarrh. By M. F. Coomes, M.D. Louisville, Ky.: Bradley & Gilbert; 1880.

The Microscopist's Manual for 1879. Price 25c. Industrial Publication Company, New York; 1880.

Transactions of the Tenth Annual Session of Virginia Medical Society; 1879.

Relations of Communities and States during Epidemics. By Hon. James B Eustis New Orleans: 1880.

Time of Conception and Duration of Pregnancy. By Dr. Geo. J. Engleman. St. Louis; 1880.

Fluid Extracts for the Coming Pharmacopœia. Reprint from *Therapeutic Gazette*, April 15, 1880.

A Severe Case of Puerperal Eclampsia. E. Day, M.D.

Relation of the Medical Profession to the Trade Interests of Materia Medica, and a Note on Pepsin. Edw. Squibb, M.D.

Fracture of the Patella: A Study of 127 Cases. By F. H. Hamilton, M.D. Chas. L. Benningham & Co., New York; 1880.

The Management of Children in Sickness and in Health. By A. M. Hale, M.D. Philadelphia: P. Blakiston; 1880.

Post Mortem Examinations. By Prof. R. Virchow. Philadelphia: P. Blakiston; 1880.

Thos. Keith and Ovariotomy. By J. Marion Sims, M.D. New York: Wm. Wood & Co.; 1880.

Aids to Chemistry. Part II: Inorganic—The Metal. By C. E. A. Semple. New York: G. P. Putnam's Sons; 1880.

Perinephritis. By V. P. Gibney, M.D., New York.

Kolpo-Cystotomy by Electro-Cautery. By Jno. Byrne, M.D.

Cases of Tracheotomy for Croup and Diphtheria. By E. F. Ingals, M.D.

Diseased Meats and Foul Water. By H. M. Lyman, M.D.

The Bromide of Ethyl as an Anæsthetic. By J. Marion Sims, M.D., New York.

Aids to Materia Medica and Therapeutics. By C. E. A. Semple. New York: G. P. Putnam's Sons; 1880.

Aids to Chemistry. Part III: Organic. By C. E. A. Semple. New York: G. P. Putnam's Sons; 1880.

Aids to Physiology. By B. T. Lowne, F.R.C.S. New York: G. P. Putnam's Sons; 1880.

Aids to Chemistry. Part I: Inorganic—The Non-Metallic Elements. By C. E. A. Semple. New York: G. P. Putnam's Sons; 1880.

Transactions of the Medical Society of Tennessee; 47th Annual Meeting; 1880.

The Histology of the Blood Vessels. By E. C. Wendt, M.D. New York: D. Appleton & Co.

The Therapeutic Value of Iodide of Ethyl. By R. M. Lawrence, M.D.

The American Medical College Association; 4th Annual Meeting, New York, 5-31-80 and 6-1-80.

Physicians and their Patients. A Lecture by C. H. Merrick, M.D., Portland, Oregon.

Annual Announcement of University of City of New York for 1880-81.

Study of Fractures of Inferior Extremity. By L. S. Pilcher, M.D., Brooklyn, N. Y.

Indication for an Early Trepanation of the Mastoid Process in Acute Otitis, etc., etc. By F. C. Hotz, M.D.

Annual Announcement St. Paul Medical College.

Division of the Sphincter Ani Muscle as a Therapeutic Measure. By C. B. Kelsey, M.D., New York.

Optico-Ciliary Neurotomy. By J. J. Chisholm, M.D.

Thirteenth Annual Catalogue Detroit Medical College, 1880–81.

On Coccygodynia. By E. W. Jenks, M.D.

Thirty-eighth Annual Catalogue of Rush Medical College, 1880–81.

Report of N. O. A. S. Ass'n on Construction and Management of Privies, 1880.

Sea Sickness. By Geo. M. Beard, M.D.

Prolapse of the Ovaries. By Paul F. Mundé, M.D.

Announcement of Medical Department of University of Pennsylvania; 115th Annual Session, 1880-81.

Annual Announcement of Trinity Medical School, Toronto; Session 1880–81.

Chirurgie Antiseptique. Principes Modes d'Application et Resultats du Pansement de Lister. Par le Dr. Just Lucas, Championnière, Paris; 1880.

DR. LEVINSTEIN, of Berlin, Prussia, has had under treatment for morphinism eighty-two men and twenty-eight women; of these 110 patients, thirty-two were physicians, eight physicians' wives, seven persons more or less intimately connected with the profession, eight apothecaries, and one apothecary's wife. Of the thirty-two physicians, twenty-eight relapsed, as did all the apothecaries.—*Gaillard's Med. Jour.*

WE regret to announce the death of Dr. F. H. Davis of this city, the talented son of our senior editor, Dr. N. S. Davis, and we deeply sympathize with our associate in this, his great bereavement.

Selections.

Some Points in the Pathology of Tubercle. By J. M. Da Costa, M.D. Read at the meeting of the Pathological Society of Philadelphia, April 22, 1880.

In attempting to put together some thoughts on the pathology of tubercle, it will be necessary, however briefly, to refer to the unsettled state of the question in the best medical minds of the day. Immediately following Laennec, nothing could have appeared more firmly fixed than the doctrine he so clearly enunciated. It was impossible to doubt tuberculosis as a specific disease. To have misgivings as to the nature of consumption and its constant association with tubercular destruction was to appear to return to barbaric darkness. Not to separate with clearness the different forms of tubercle was to forfeit all claim to be a pathologist. But we all know what has recently happened. The German iconoclast has been at work. Nobody likes to speak now of tubercular diathesis, of tubercle being a constitutional affection. It is for the most part simply the result of a local inflammation; and cheesy matter, infective process from absorption, irritation in structures abounding in lymphatic tissues, are the complacent phrases of the day, which satisfy most as much now as diathesis, constitutional condition, specific deposit, satisfied most not many years since.

And the local view, if such it may be called, once adopted, has brought with it scores of interesting observations on the inoculation of tubercle; its artificial causation; its production in the lung by inhalation of both tubercular and non-tubercular substances—observations which are warmly discussed, criticised, adopted, rejected, explained, explained away, and the uncertain-

ties connected with which, quite apart from the other difficulties of the subject, are the cause mainly of the generally disturbed condition of the whole inquiry.

Underlying these observations, or at least closely connected with them, lies the vital question, What relation does tubercle bear to the inflammation? And it is this question particularly that I desire to examine with you a little more fully to-night, and concerning which I shall venture to offer the result of some researches and reflections.

As a necessary introduction, I shall have to examine the evidence on which we pronounce a mass to be tubercular; in other words, what its minute structure as shown by the microscope is. And, to avoid any confusion at the threshold of our inquiry, let me speak of that which we find in undoubted tubercle, in the little, hard, miliary bodies, which may afterwards become aggregated into larger, gray masses. In them we encounter three elements:

Medium-sized, rather shriveled cells, not very regular in outline, consisting of finely-granular, dense material, with a nucleus small in proportion to the cells, or with several nuclei of similar character. They were once regarded as significant of tubercle, but they are now supposed to be swollen epithelial cells which have undergone retrograde metamorphosis. Mixed up with them are cells less dense and like ordinary epithelium, small cells like leucocytes, and a great deal of granular material of doubtful origin.

Giant cells. These consist of large, many-nucleated cells, which are found at rather an advanced stage of tuberculosis, and are very marked in the acute form. They are of spheroidal shape, and somewhat irregular outline. Great stress has been laid on them as significant of tubercle, but they have been met with in deposits in various tissues of the body, in scrofula, in syphilis, and in merely hyperplastic lymph-glands of those perfectly free from tubercle.* As they grow they send out long, branched processes. With Klein, I believe them to be excessively developed or fused epithelial cells.

* Weiss, Virchow's Archiv, lxviii.

The structure in which all these cellular elements are found, especially, perhaps, those last described, is *a fine net-work* like the fine trabecular net-work in the interior of lymphatic glands; and this led to the belief entertained until recently by Rindfleisch, that tubercle is a lymphoid growth. But this is not stating the whole of the manner and arrangement of the cells in tubercle. They are found in the lungs filling the alveoli and infiltrating—generally as small, round cells—the alveolar walls, and leading to very considerable thickening of the latter.

To sum up, cell-growths by themselves, not peculiar, but representing different grades of development—some still rapidly growing, others shrivelling and full of dense matter; all capable of being washed out of a fine reticulum, or accumulating in masses both within and in the walls of air-vesicles—this structure, this grouping, may be regarded as tubercle. Then there are certain secondary alterations that take place in the tubercular formation and the invaded tissue which must also be mentioned, and which bespeak a retrograde change and low vitality. The main of these changes is a degeneration of the cell-growths, an accumulation of granules and fatty material, and an occlusion of the pulmonary capillaries, probably from pressure, and here and there a fibroid transformation of the giant cells.

Now, what causes all this? Some still maintain a specific non-inflammatory deposit; some say an inflammatory process of slight intensity; others a specific inflammation. I pick up a recent journal, and see that malaria is at the bottom of all this strange cell-growth and rapid decay. I turn to one of this month, and I find in the front of the periodical an article proving that tubercle has its origin in disorders in the trophic centers, and in the middle pages another, showing that it is an accident, the result of the capillary interference, due to altered condition of the blood from the presence of yeast. It is almost needless to say that the bacteria are made to explain the peculiar formations, for how could these patient little beings that are bearing so quietly being made the scapegoats of the pathologists of the last half of the nineteenth century, escape having charged to them this additional sin? I turn with eagerness to discussions of the subject replete with learning in societies similar to ours, and there is little but negation. It is not this,

and not that, say men who are known wherever medicine is cultivated; and you begin to doubt if there is such a thing as tubercle at all, until the first clinic-room you go into—and see the familiar face, hear the cough, and recognize the well-known signs—confronts you with the stern reality of the awful disease. With all these doubts and gropings after the truth, I may be pardoned if I hold fast to the belief that the process, whatever it be, is something special, though something of which we do not hold the key.

To return from this digression to one part of the subject around which much of what is positive in our knowledge has clustered, and which is of most obvious applicability—the relation of these mysterious tubercular formations to inflammation.

Now, we all know how the relation of tubercle to inflammation has engaged the attention of the present generation of pathologists. Yet the consideration of the question long antedated them; and the much-neglected observations of that sagacious thinker, Addison, are really the key-note to many of the views now brought forward under other names. But this is a historical issue, with which we cannot further concern ourselves here. The active discussion of the matter started with the observation of Virchow that the caseous matter previously regarded as infiltrated tubercle might originate from the fatty degeneration of diverse morbid products, and was non-tubercular; indeed, that the gray granulations alone were tubercular and non-inflammatory. Niemeyer expanded this thought, and engrafting on it the doctrine of Buhl, of the infection of tubercle, promulgated the view that the lung consolidation and destruction were most commonly inflammatory—the result of the caseous pneumonia—and the tubercle, when met with, quite secondary and accidental. Indeed, to carry out Niemeyer's ideas logically, the inflammation is, in the vast majority of instances, everything, the tubercle nothing.

The doctrine of Buhl has been alluded to, that tuberculosis—as seen, for instance, in its most typical form of miliary tubercle—is due to infection from masses of cheesy material. The infection happens chiefly through the lymphatics. This infection theory led to numerous experiments on animals, with the result

that inoculation in rabbits and guinea-pigs with fresh miliary tubercle, with cheesy matter, with the sputa from tubercular patients, has been followed by acute miliary tuberculosis. Moreever, going still further, Cohnheim and Fraenkel have shown that it is unnecessary to inoculate with these special matters, for in rabbits and guinea-pigs the formation of any focus of suppurative inflammation may fill the viscera with tubercles. With reference to these experiments, it has been pointed out that the kind of animal on which they are made has much to do with the the result. Rabbits and guinea-pigs are particularly prone to tuberculosis. Yet, as regards inoculation with tubercular matter, it has also succeeded on other animals, as in the experiments of Böllinger on goats.*

Another group of experiments must be alluded to,—those in which pulverized tubercle and cheesy matter have been forced into the lung by inhalation. These have been followed by tubercular-looking nodules; and so have, as Schottelius† has recently demonstrated, inhalations with non-tubercular substances, such as pulverized calf's brain and cheese, produced apparently identical bodies. They are the results of inflammatory irritation. But, microscopically examined, they do not present the appearances of tubercle.

Summing up all the experimental observations, they seem to me to prove that tubercle may be transmitted by inoculation either of true tubercular matter or so-called caseous pneumonia; that resorption of tubercle and infection of previously healthy parts is a view sustained by evidence; that the production of tubercle from non-tubercular material, either by inoculation or by inhalation, is not proved. Inflammatory nodules arise, but they have not the structure of tubercular formations.

I shall now attempt to answer the question what is the exact nature of those inflammatory changes in the lung which give rise to destructive consolidation, supposed to be non-tubercular, yet from which, by infection, tubercle may come. In other words, I shall endeavor to describe the histology of so-called "caseous pneumonia," or pneumonic phthisis. We find within

* Mittheilungen aus dem Pathologischen Institute zu München, 1878.
† Virchow's Archiv, lxxiii, 1878.

the alveoli an accumulation of large cellular elements, mixed with leucocytes and exudation matter. We observe the alveoli walls thickened and infiltrated with cells, the vessels compressed, accounting for the breaking down of the bloodless masses accumulated in and around the alveoli. We meet with inflammatory infiltration in the walls of the bronchi, and as Rindfleisch has so well pointed out, around them, as well as with increased connective tissue between the lobules and around the finer bronchial tubes. In studying the cellular masses we encounter the so-called giant cells. There is, indeed, nothing we do not find in this caseous pneumonia that we have not spoken of in tubercle, only the proportions are different and the admixture of the elements of inflammation more marked. These changes spread usually over a large portion of the lung, and, especially as regards the amount of connective tissue, are modified by the duration of the disease. One of the most striking of the lesions, and one which I have rarely failed to encounter in the many specimens examined, is the infiltration with small cells of the walls of the alveoli. Green,* too, regards them as very important, and Wilson Fox† looks upon them even as tubercular. As the cheesy matter degenerates, evidences of broken-down tissue, with considerable granular detritus, meet the eye. Yet Cohnheim‡ has recently told us that the cheesy part contains in reality but little fat.

Now, is there anything in all this which broadly separates this so-called caseous pneumonia in its minute structure from tubercle? Is there anything more than the evident admixture of a marked inflammatory lesion? Is there anything in the low vitality of the mass and its tendency to decay and fall asunder which is different? And if we call this affection at once "tubercular pneumonia," we are, I verily believe, much nearer to the truth than in endeavoring to separate it from tubercle altogether.

But it is not simply on histological grounds that I arrive at this conclusion. I have long studied the subject clinically, and can record it here as my deliberate opinion that the number of

* Pathology of Pulmonary Consumption, 1878.
† Transactions of Pathological Society of London, 1873.
‡ Die Tuberkulose vom Standpunkte der Infektionslehre, 1879.

cases of consumption which are supposed to have inflammatory beginnings is grossly exagerated. They are the exception, not the rule; and even in the cases in which we have had evidence of an active bronchitis or pneumonic condition having seemingly been the start of all the difficulty, how often do we not find, on close analysis, that failing health, hacking cough, even slight spitting of blood, have preceeded the acute symptoms? Then, too, we may get the history of inherited scrofulous or tuberculous diathesis. But I do not wish to be misunderstood. There are cases in which none of these qualifying elements can be discerned, which have, to all appearance, started in an acute inflammatory process. It is only the relative frequency of these cases that I am denying.

Again, I ask, what becomes of the instances of so-called pneumonic phthisis? Do they become tubercular? How many autopsies can any one recall, where persons dying from some intercurrent affection, while laboring under so-called pneumonic phthisis, did not show at some portion of the lung, miliary tubercle or larger masses which everybody would pronounce undoubted tubercle?

Now, admitting the connection of so-called "caseous pneumonia" or "pneumonic phthisis" with the subsequent development of tubercle,—and nobody denies this, whatever his views as to the character of the connection,—I believe that it is quite as logical to reason from the after-appearance of the tubercle as to the primary character of the so-called inflammation, as to reason from the inflammation and absorption of its products to the formation of the tubercle. The reasoning backward is as good as the reasoning forward, and, I think, infinitely more likely to be true.

Again, how many cases of ordinary pneumonia happening in perfectly healthy persons are met with which pass, no matter how, into tubercle? Certainly not many. When it occurs there is generally the history of scrofula or tubercle in the family, the taint. Many of the advocates of the inflammatory origin of tubercle, or of its subsequent development after inflammation, tacitly admit this when they speak of the inflammation as special or specific. If it is special or specific, I say at once it is tubercular,—tuber-

cular either from the onset, or it has become so when it presents the appearance of caseous changes.

I am advocating, then, the view that caseous pneumonia leads to tubercle elsewhere, because it is really tubercle already; and that it is not the products of ordinary inflammation, but the tubercular products, which infect. They may appear with the inflammation or be the result of a special kind of inflammation; that does not affect my argument.

Now, one great difficulty in admitting this argument is, that since the researches of Virchow have familiarized us with the facts we cannot assume all kinds of caseous degeneration as tubercular. We know that such changes may happen in purulent collections, in cancer, and that, microscopically, they present the features of the so-called cheesy degeneration which attends pneumonic phthisis. But is there nowhere else similarity of appearance without identity of meaning? Can we tell every case of cancer, under all circumstances, by its cell-growth alone? Are there no healthy textures in the course of formation that look like it? Does every sarcoma present infallible features at all its stages? Moreover, I have already stated that we very generally, nay, almost constantly, find in the pneumonic lesion much the same elements, mixed with the products of degeneration, which we recognize as tubercular in undoubted tubercle.

I believe, then, that pneumonic phthisis is a tubercular pneumonia, and that the inflammation is tubercular from the onset, or has acquired a tubercular nature by changes in the cell-life which we do not understand. Perhaps these are connected with sluggish tissue-change under the influence of a virus,—a taint inborn, or acquired by impure air and bad hygienic surroundings. That we cannot see these things in the protoplasm or cells with even our highest powers is no proof of their non-existence. Do we perceive the manly form of the athlete in the little spermatozoon? What do we find in the ovum to explain the transmission of the delicate features and matchless figure of one generation to the famed beauty of another? Where are, in either germs, the lurking tendencies to disease which we see constantly reproduced in families? Where the specks that indicate cancer, scrofula, tubercle, gout?

The tubercular inflammation may appear as such, and then we have a more or less acute character of case; or the tubercular action may not start for years afterwards. I shall show you some drawings taken from cases that I had watched for years.

Here is one from a woman of 45, who, under my observation, had for eight years a chronically-consolidated lung, non-tubercular. Sorrow overtook her, her general health failed; struggles with poverty came, and she became tubercular. You perceive here how the lower lobe of one lung had undergone the caseous change and contained tubercles, while the upper is simply dark with pigment and densely consolidated. A few scattered, comparatively recent miliary tubercles are found in the other lung.

Here is a yet more striking instance, where a man had for five years a lung which, you see, looks exactly like the red hepatization of ordinary pneumonia. Softening, without a vestige of tubercle, is occuring in parts. In a streak at the upper lobe tubercular pneumonia is evident; the other lung is entirely healthy.

Perhaps the views here advocated may appear to call in doubt the transmission of tubercle by resorption and infection,—its constant reproduction, as it were, and scattering through the system. But they do not. These observations are among the best sustained and most valuable in modern pathology, and they are all the easier to understand if we admit the starting-point of the infection to have been a tubercular inflammation. As a contribution to this doctrine of infection and absorption, and also as furnishing many points of analogy with the instances mentioned where inflammation of the lung has been followed by tubercular formation, let me show the remarkable specimens of abdominal tumors and tuberculosis on the table, taken from cases of mine that happened some years since at the Pennsylvania Hospital.

In the first case, occuring in a man the subject of syphilis, and much tormented with abdominal pains, a hard tumor was discovered in the right iliac fossa. This was followed, after some months, by marked emaciation, sweats, diffused abdominal tenderness, diarrhœa, and signs of deposit in the lungs. At the autopsy the mass you see here of dense fibrous tissue was found in the

right iliac fossa, below the head of the colon; a small cavity containing pus was detected in its interior; on its exterior were tubercular nodules, The intestines, on their peritoneal surface, throughout their length were thickly studded with tubercular nodules; the mesenteric glands were enlarged and softened; there were miliary tubercles in the lungs.

In the second case, a man also broken down by syphilis, there was the same history of colics and cramps, a tumor was discovered in the right iliac fossa, three inches from the crest of the ilium. He had noticed the tumor for years. Gastric irritability, tenderness over the abdomen, ascites, diarrhœa, fever, cough, signs of lung-consolidation, became gradually prominent symptoms, and he died exhausted. A thick, firm mass of inflammatory matter was found covering the cæcum, and had occasioned the tumor. At one part, on the outer and lower wall of the cæcum, was a small cavity containing gelatinoid matter mixed with black, thin fluid. The ileum above the ileocæcal valve, as well as the inflammatory, hard tissue in this region, was covered with tubercles. The kidneys contained tubercles; in the left supra-renal capsules were several tubercular nodules. The lungs were full of small, gray, tubercular granulations.

Here, then, are two cases of strange similarity, in which a local inflammation in the abdomen was followed in time by diffused tubercle, both abdominal and pulmonary. But let us return to what I more particularly meant to discuss,—the formation of tubercle in the lungs, and its bearing on the different kinds of phthisis, especially pneumonic phthisis.

Will the views which I have endeavored to bring before you do away with the clinical distinctions concerning which we hear now so much? Not at all. If the so-called pneumonic phthisis has a separate history, gives points for special diagnosis and prognosis, requires different treatment, it ought, no matter what our views of its real pathology, to be recognized as a distinct form. But let us go no further; we are leaving the broad highway for rough and tortuous paths, when, as is the tendency of the present day, we attempt to sweep all cases of lung-destruction into the phthisical category.

What do we gain by reverting to a very old nomenclature, and

by making phthisis a generic term? To carry this out, we ought even to abolish the word cancer, and speak of it as a cancerous phthisis, for surely there is also destruction of the lung enough in pulmonary cancer. The consequence of all this agitation about the word is nothing but confusion. Scarcely two persons seem to use phthisis in the same sense. There are forms of lung-destruction which are clearly non-tubercular; let us give them their special names, and not apply to them a term which has long been applied to that by far most common form of lung-destruction,—phthisis from tubercle. Pneumonic phthisis may be made a separate variety; but that ought to be all. Nay, I venture to suggest whether, in view of the idea long associated with the name of phthisis, and of what I still humbly believe is beyond comparison the most frequent cause of the consumption, it will not be better, unless some other form is particularized, still to retain the name for the tubercular malady, and to so understand it.

But I have claimed your indulgence long enough, and, in bringing these remarks to a close, I can only hope that some train of thought may have been suggested by them which your labors will brilliantly elucidate. *E scintilla lux;* from the flickering glimmer of to-night I trust through others for the steady glow on a subject that sadly needs light.

—*Philadelphia Medical Times.*

ON MOVEMENT AS A THERAPEUTIC AGENT. By JOHN K. SPENDER, M. D., London, Bath.

The therapeutic doctrine of Rest has had so many prophets and bards, that it may seem daring to ask the question, whether it has not been pushed a little too far, or always used with discretion. The service done in this matter by the late Mr. Hilton cannot be overvalued, because, before 1861 (or thereabouts), there was no distinct appreciation of the physiological reasons of rest. It had been often applied without precision, and still more often in a halting and imperfect way. The enthusiasm which was the fruit of Mr. Hilton's teaching carried us almost out of the domain of pure unemotional science. The theory was not new, but it

was put in the most attractive guise. Rest is first cousin to sleep; and if sleep can refresh and restore the healthy body, why may not rest undo some of the bad doings of disease? My present argument is not to disparage rest, but to plead for its more rational application. A remedy may be too benign, too quiet, almost too agreeable. It may be potent to subdue the slow workings of an insidious malady, but the healthy nutritional forces of the body require stir and exercise, anything but too much rest. Herein lies the danger—the real danger—that rest may not be left off at the proper time, and normal movement begun. I venture to ask, therefore, whether the therapeutic pendulum of rest has not swung rather too far.

It is indeed remarkable that there was no formulated doctrine of either rest or movement until within the last twenty years. As therapeutic agents, the words are not found in the index of Dr. J. Mason Good's *Study of Medicine* (1840); nor in that of Dr. Copland's *Dictionary of Practical Medicine* (1850); nor in that of Dr. J. Hughes Bennett's *Principles and Practice of Medicine* (1859). There is no index to South's *Translation of Chelius' Surgery* (1847), but I can find no allusion to the subject in this really grand work. It is admitted that, in an empirical sense, rest and movement have been employed since medicine became an art; but the scientific grounds for either one or the other were not always clearly grasped or opportunely carried out. The boundaries between the conditions which demand such opposite lines of treatment are sometimes not easily traced. How are we always to know when local symptoms have become so quiescent, that it is safe to undo the fetters of immobility and restraint, and tell a lame man that he may try to walk, or let a crippled hand begin to work? Pain is not an unerring guide. It is a fact in clinical medicine, that rheumatic neuralgia is sometimes worst when muscles are most rested; for a rheumatic person may awake after a night of good sleep with limbs stiff and painful, which symptoms distinctly pass away after moderate exercise and warm food. In like manner, surgical rest may continue too long.

Take the case of an acutely inflamed joint. Under the discipline of enforced rest, the synovial effusion becomes gradually absorbed; the classical signs of inflammation pass away; and

when all danger of relapse has finally subsided, an organ of locomotion ought surely to be allowed gradully to return to its duty. But it is the fashion to confine an injured joint so long in wrappings and encasements of an immobile kind, that there is a risk of *quasi*-fibrous ankylosis, relaxation of ligaments, rigidity of tendons, and commencing atrophy of neighboring muscles. Now, in order to prove that these are not imaginary evils, I will relate in the briefest manner three cases selected from several more of a similar kind.

(*a.*) In March 1869, an elderly lady showed me her right knee, enveloped in splints and bandages. Towards the end of 1868, there had been an injury, the nature of which was obscure. She thought that she had struck or twisted the knee. There was little effusion into the joint, but the lower end of the vastus muscle seemed lifted from the femur as by a distended bursa. Hence this muscle acted at a disadvantage, and could not properly extend the leg. There was no sensation which could be called pain; but the stiffness and general uneasiness in the knee disabled her from walking, and *these symptoms supplied the reason why the joint had been kept so long at rest.* The leg was wasted, and there was a general weakness of the whole limb.

(*b.*) In October 1877, a gentleman under thirty years of age consulted me, and gave the following history. In July 1876, while "walking almost at a run in the dark, he fell into an iron harrow, the two knees fitting into a square of the harrow, so that the iron missed the knee-joint and met the limbs on the muscle above and on the bone below." He was not concious of any immediate symptoms, and walked about as usual; but in a few days there came on stiffness, and then pain, the latter being never of great severity. Local means gradually subdued local troubles; and then followed a long period of "irritability" (to use my patient's own word) for which the professional treatment was that the foot was for nine months supported in a sling, the other end of which went round the neck; and at night the knee-joint was packed in splints to prevent movement during sleep. For several months he carefully abstained from bending the leg upon the thigh, because he was emphatically told that continued rest was necessary. One result of this management was that, on the

least strain or blow, the joint suffered from new attacks of "irritability" and pain.

(*c.*) The wife of a tradesman fell down some steps at the Bristol Railway Station on July 25th, 1878, and fractured the radius of the right arm. The fracture was properly set, and the splints were removed at the end of August. A bandage was then applied for three weeks. On November 1st, a starched immobile apparatus was put on, and allowed to remain for four months. When this patient first came to me, at the end of last May, the hand was nearly useless, simply from atrophy of the muscles. The hand had been imprisoned too long, and no directions had been given to arouse functional activity after its liberation from imprisonment.

Now the memory of some of my readers may recall the practice of the late Mr. Hutton, and the lessons gathered from it by Dr. Wharton Hood. The various conditions of joints which came under Mr. Hutton's treatment were easily classified, and included a large number which were stiff and painful from injury, or had been kept at rest for the avoidance of pain either after some injury to themselves or to the soft parts around them. Summed up in a few words, Mr. Hutton's principle was the rupture of adhesions by manipulative force, guided by skillful leverage. We learned from him that the joints will bear much rougher usage than is sanctioned by professional tradition; but this is not the point now at issue. The sort of case which I have just illustrated stands apart from those which are treated with sudden and violent flexion and extension. In dealing with a joint which has not been materially damaged by inflammation, is not much enlarged, but is now weak mainly because the muscles are weak which ought to move it, a thorough and scientific shampooing (or *massage*) is our therapeutic watchword. The physiology of the joint has to be studied more than its anatomy. The joint is afraid of itself because it is not used; its volitional energies are "hidden under a bushel;" and the owner of it has, perhaps, been scared by the terror of what may happen if he presumed to walk even with the help of crutches. It is satisfactory to know that Dr. Sayre, who is the designer of such an ingenious plan for supporting and rest-

ing a diseased spine, distinctly says that, in the case of ankylosed limbs, there is "a time for motion as well as a time for rest." *

First, then, we satisfy ourselves that the joint-ends of two bones are not mortared together, and do not require any forcible methods for their separation. A patient may be put partially under the influence of chloroform if necessary, and the capability of a joint to be bent or extended will then be fairly tested, and we shall discover what checks there are to healthy movement. The passive play of a joint tells us that its mechanism is sound; but the question is, What are its vital activities? What can the patient do with it, and how far can he use it? In the three cases which I have briefly delineated, I could see nothing to hinder the limbs from being actively employed. They needed to be brought out of the prison in which they had been immured by professional swaths and bands, and stirred into a more quickened life. They were suffering just as the whole body would suffer if, when clearly recovered from acute disease, it were still compulsorily confined to the bed or the bed-chamber.

The simple plan of treatment which I have for years adopted is as follows: Imagine the knee to be the affected joint, and the foot should rest on a stool or block of wood just within a large shallow open bath, so that the knee is over nearly the center of the bath. A jug, holding about a pint of fluid, is filled with tepid water, and is turned upside down about three feet above the knee, so that the water falls with a splash on the joint; and this is repeated from six to twelve times. An attendant, sitting in front of the patient, then plants a hand on each side of the knee, and, with the thumbs meeting in front, the hands should be moved firmly up and down for eight or ten minutes. The pressure used should be equal and well sustained, not causing any uneasiness, not in the least rough, but such an union of firmness and gentleness as a practical manipulator will easily understand. The thumbs, while agents of moderate pressure themselves, may be made the fulcra for pressing and rubbing the back of the joint.

* *British Medical Journal* August 30, 1879. While writing this paper, the 14th volume of *St. Bartholomew's Hospital Reports* came under my notice, and I have read with pleasure Mr. Willett's paper on Manipulation in Surgical Treatment. The cases which he relates are interesting; but they are examples of the utility of "forcible movement," and, therefore, belong to a different class from my own cases.

At the end of the shampooing process, the whole joint ought to be dry and warm, and to be immediately wrapped in a covering of oiled-silk lined with wadding, which should be securely fastened and kept on for some hours.

By this easy plan, carried out regularly once or twice a day for several weeks, there is seldom any difficulty in restoring the torpid functions of non-ankylosed joints. Now and then it may be desirable to suspend the friction for two or three days, if the skin show signs of irritation; and in warm weather the impervious pad is scarcely necessary, and might cause an eruption of pustular acne. Medicated lotions or liniments are rarely prescribed; but now and then I introduce under the oiled skin wrap a piece of folded flannel soaked in a mixture of tincture of iodine (half an ounce), glycerine (half an ounce), and soft water (seven ounces). The early douchings are best done with tepid water; but this should be exchanged for cold water as soon as possible, on account of the greater glow and reaction which are afterwards obtained; and, during the summer months, cold water may be used from the first. In all cases, the local treatment should be supplemented by regular passive movements carefully and coaxingly executed, and never exciting pain and fatigue. Sometimes it is only timidity which hinders a patient from (say) pronating and supinating a hand, or flexing and extending an elbow; a group of muscles have to be taught anew. As the lower limbs bear the weight of the body, their voluntary exercise must be deferred until the patient regains confidence and acquires strength.

The next stage of treatment consists in the application of uniform and gentle support. A weak joint requires support when it no longer requires rest. This seems to be the key of the new and important devices of the American surgeons—prolonged pressure without prolonged rest.* The principle is not at all new. Fifty years ago, my father was curing chronic ulcers of the leg by means of firm equal pressure with a domette flannel bandage, telling his patients to walk about as usual. His practice was opposed to the almost universal surgical teaching of the day, reit-

* As a remedy (or preventive) of acute inflammation, pressure has been enthusiastically discussed by Mr. Furneaux Jordan and Mr. Sampson Gamgee.

erated since with a loudness and constancy almost overpowering;* such surgeons as Dr. Underwood and Mr. Chapman being rare exceptions to the rule. And yet it ought to have been clear that to lay up a limb in idleness admits of the healing of an ulcer by a degree of vital action, which is unable to maintain the permanence of that healing when the limb is restored to use. Similarly, when we have to treat a weak joint, the principle ought to flash upon us with unerring instinct; here is a case, we should say, for applying firm pressure and allowing moderate exercise. For the *ankle*, there is nothing better than an india-rubber bandage, put on from the base of the toes to the upper part of the leg. The bandage is far better than a so-called elastic anklet, because it supports all the muscles which move the ankle; it should make a gentle uniform pressure, without any sensation of squeezing, each fold slightly overlapping the previous one all the way up the limb. The *knee* should be enclosed during the daytime in an elastic support, *which should always be laced*, and which need not cost more than four or five shillings. The lacing allows the degree of support to be varied, according to the feelings of the patient and the amount of exercise he has to undergo. Equipped with this simple apparatus, the lower limb enjoys, as far as the upper part of the knee, a gentle and uniform pressure, which permits useful locomotion within restraining and salutary conditions.

The application of this principle to the *upper limb* is not difficult. A hand and wrist, when embraced by an elastic glove extending a little way up the arm, is competent to perform various feats of dexterous workmanship, which would otherwise soon cause aching and powerlessness. But what need is there for illustrating further such an obvious point of practice? If to be at work is the part which a healthy organ has to play, it is clear that too much rest cannot contribute to the perfection of that work, either in quantity or quality. That special condition which is called the "hysterical joint" is peculiarly amenable to the

* Take at random such a sentence as the following: "Rest is Nature's own remedy, for the application of which she takes no denial; and the practitioner of the healing art takes his cue from this great teacher. If he have an ulcer on the leg to cure, he enjoins rest, and lays up the limb accordingly." (*Medical Times and Gazette*, October 19th, 1867.)

vigorous and helpful treatment of douching and pressure. For the douching, the use of the Bath waters is much to be commended, as the dynamic stimulus of their heat maintains an after-glow, which is a sign of more vital energy. And hysteria, if it mean anything, means a lack of this energy—a crippled volition, a sluggish blood-stream, and a general undertone of life. The combination of firm pressure and moderate exercise fulfills, in this case, exactly what we ought to aim at: support to the mechanical apparatus of locomotion, and arousing and sustaining of vital function.

I heartily agree with what Mr. Roth has written about the importance of muscle-rubbing in infantile paralysis.* He insists that the superficial and deep layers of muscles should be acted upon successively: firm circular friction is made on the same spot with the ball of the thumb, from left to right and from right to left, about ten times each way; pressure should be used at the same time with the thumb—the thumb being helped, if necessary, with the other hand. The fact is, however, that we ought to vary our manipulations according to the age and sensitiveness of the patient, and the duration of his malady. Thus, we use in one case stroking (*effleurage*), and in another kneading (*pétrissage*); sometimes percussion (*tapôtement*) is most beneficial; and, now and then, it is best to trust to passive motion. The last three methods are particularly adapted to chronic inflammations. Hard kneadings crush and break up old hyperplastic tissue, and the detritus is passed into the lymph-stream; vascular congestions are emptied, and the vaso-motor nerves are mildly irritated. The infriction of medicated substances may be an occasional aid, and among the best are mild iodine ointment and the liniment of iodide of potassium.

Rest and movement are, therefore, complimentary to each other, both in physiology and in therapeutics. The analogy is as close as possible. Alternation of work and rest is the law of the human organism in health, and health could not be preserved without it. Disease may call for a prolongation of the element of rest; but it is a note of clinical insight to discover when the

* *British Medical Journal*, June 14th, 1879.

disease ends, or when sufficient health returns to justify the usual alternate rest and work. Continued work without rest could not be; rest continued too long is not only conceivable, but it is the object of this paper to illustrate it as one of the present dangers of therapeutic surgery.—*British Medical Journal.*

IMPROVEMENT OF SAYRE'S TREATMENT FOR SPINAL CURVATURE.—Mr. Richard Davy, of London, believes he has an improvement on Dr. Sayre's method of tripod suspension in applying the plaster of Paris jacket in spinal caries. He places the patient in a hammock face downward, arms hanging through slits in the canvas. Extension may then be used or not, according to the views of the surgeon, and the plaster of Paris or other dressing leisurely applied, including the canvas. A free circulation of air is allowed access to the body and the dressing dries rapidly, the patient often sleeping during the time employed. After the drying is complete the spare canvas is trimmed and the patient literally takes up his bed and walks. After reviewing some of the other methods of treating spinal caries according to Sayre's plan, that is of providing an outside support of the body, relieving the weak spinal column, Mr. Davy concludes in favor of his own plan. Aside from the small expense and inconvenience involved, a hammock some times being extemporized from a stout sheet or long night-gown, he thinks suspension not always quite safe in spinal and especially cervical caries, and that in removing the dressing after it causes pain, it is removed too late to avoid mischief. He quotes liberally from the late John Hilton "On rest and pain," and asks if any surgeon after thoughtfully reading Lecure 5, can be ready to fearlessly suspend cases of cervical caries.—*Foreign Cor. American Practitioner.*

Summary.

Collaborators:

DR. L. W. CASE, DR. R. TILLEY,
DR. BYRON W. GRIFFIN, DR. W. L. DORLAND.

TRANSFUSION IN ANÆMIA.

Dr. DeCailhol, in *Ohio Medical Recorder*, gives a case of transfusion in extreme anæmia after the manner of Dr. Moncoy, the French specialist, using nondefibrinated blood by direct transfusion from the basilic vein of the right arm of the husband of the patient, a strong, well developed man, absolutely free from constitutional taint, into the patient's right arm through the median basilic vein. Two ounces of blood only were transfused, but the pulse instantly rose and the patient felt warmer and more comfortable. Rest and milk diet prescribed, with two ounces of warm defibrinated beef blood, and two ounces rich soup made of beef and pork pancreas every four hours by enema, the stomach tolerating nothing but the milk. In twenty days the operation was repeated and an ounce and a half transfused; treatment continued. The stomach then able to tolerate a small quantity of beef tea to which was added pepsine. A third and last operation (performed with difficulty on account of the patient's marked improvement), occurred in eighteen days. Two days subsequently the stomach tolerated chicken, and she was able, gradually, to use more solid food. In forty days after the last transfusion, the patient started for Europe and returned in two months with plump and rosy cheeks and every appearance of good health.

The doctor remarks in summarizing the case that no iron was given after the first experiment which the stomach refused to

tolerate, and he firmly believes the cure due to the four and a half ounces of healthy blood transfused. He has known of many unsuccessful cases of transfusion in the United States, which can be attributed to the neglect of various minutiæ in the operation, such as the use of improper or imperfect instruments; the use of defibrinated blood; woman's blood; milk; or after too much manipulation of the vein, all just so many causes of failure. Dr. DeC. has never met with failure in following strictly the rules laid down by the French specialist in his monogram on the subject (which, by the way, Dr. DeC. intends translating for the benefit of the American profession), the most imperative of which are: to use none other than the blood from a perfectly sound man between twenty and forty years of age. The blood must not be defibrinated; it must be transfused slowly, not in a large stream lest the heart be taken by surprise. He uses nondefibrinated blood because the assimilation is to be made at once, without alteration in the blood. He thinks blood loses by the removal of its fibrin the best part of its constituent, and is thereby rendered unfit and even dangerous to the circulation. To the timid operator who fears coagulation of the blood during transfusion, he says no such thing ever takes place if the surgeon is careful and expert and has everything ready at hand; is well assisted and uses a suitable instrument properly handled and not over-heated, (though he does not give the one he uses), as the blood clots sooner by heat than cold. The surgeon must bear in mind that he has from three to four minutes before him to transfuse before clotting will take place, and this is ample time for the transmission of two ounces or more.

As to the defibrination of the animal blood used by enema, it is thus used because it will not keep twenty-four hours; also it is intended for food and does not go immediately into circulation.

WARNING TO TRAVELERS.—A communication which we have received from a traveler describes a severe outbreak of typhoid fever in Switzerland, to be traced, it is stated, as most of such outbreaks are traced, to impure drinking water. This frequent cause of disease to travelers, will, in the end, scare away travelers to a considerable extent from Continental travels, unless the

local authorities of the principal towns of summer-resort on the Continent manifest a more earnest determination to purify the air, soil, and water, and especially to provide a perfectly pure and undeniable source of drinking water, which is rarely to be found at present in any Continental town or village. Sir Henry Thompson, adverting to this abundant source of danger to travelers, recently recommended that every traveler should carry with him a filter and a teapot, by way of practically abolishing, by personal care, some of the danger of impure water by securing that it should be very thoroughly boiled before being used. Dr. Hermann Weber, whose experience of foreign resorts is perhaps greater than that of any other English authority, has published a similar warning to travelers, and has recommended them to use Apollinaris water whenever it is to be obtained as an undeniably pure drinking water, which would secure them from these dangers; and he has stated that he has known, in more than one instance, when members of the same traveling party have been careful to adopt this precaution, while others have neglected it, that those who adopted such precautions have been saved from typhoid fever, which attacked other members of the party. In the meanwhile, some such precaution for obtaining drinking water of absolute and guaranteed purity must recommend itself as a necessary means of safety. Recent analyses by chemical authorities, of which some of the results are before us, have shown that the water contained in the syphons which are introduced at foreign *restaurants* is not more reliable than the ordinary water supply; indeed, a table before us, to which, perhaps, we shall subsequently have to refer, indicates that, in one great foreign city at least, the water in the syphons is very much more impure than even the ordinary city drinking water, being in some cases little better than diluted sewage water. It appears that the manufacturers of these aërated waters in foreign syphons are by no means very careful from what kind of surface wells they draw their supply, or how they purify their water; and on the whole, the danger of drinking the aërated water of syphons is, unless the quality be definitely ascertained, greater even than that of drinking the ordinary impure water. It is quite time that foreign authorities should turn more serious attention to this subject. The evidence

of the carriage of typhoid poison by contaminated water, overwhelming as the demonstration has been in this country, is by no means sufficiently appreciated abroad; indeed, the subject has been so imperfectly treated, that some foreign authorities profess absolute ignorance of facts which may now be taken as among the best established of modern times. It is well, until they have become more enlightened, that travelers should regard drinking water with precaution, and should be satisfied in some way or other that the table-water they drink is of absolute purity; and such assurance is best obtained by confining themselves, when traveling, to the use of a natural mineral water, suitable for table purposes and of undoubted pure origin.

—*British Medical Journal.*

NOTES ON RENAL AND URINARY PATHOLOGY.

1. "RENAL CALCULI; Their Causation, Character, Symptoms, Treatment and Prevention." By ROBERT L. WEIER, M.D., etc. (*N. Y. Medical Journal*, August, 1880.)

Dr. Weier presents one item of interest in this lecture, namely, the presence of the "submorphous" form of oxalate of lime, and of the urates in the nuclei of urinary calculi, and the fact that "these submorphous crystals are deposited under certain special conditions, viz.: the presence of a colloid material, which may consist of mucous or some other organic substance, but * * * this is an essential element in the formation of stone." As to the prevention of renal calculi, the essential thing, according to Dr. Weir's philosophy, is to secure and maintain proper dilution of the urine.

2. "A CLINIC ON CASES OF NEPHRITIS," etc. By FRANCIS DELAFIELD, M. D., Professor, etc. (Detroit *Lancet*, August, 1880.)

Dr. Delafield presents a case of nephritis in which he regarded it as impossible to make a certain differential diagnosis. The patient was a "young man," who had been "sick for a year, and the prominent features of his illness have been the existence of a moderate amount of dropsy, which is now diminishing, and a certain amount of anæmia." The diagnostic problem was to decide as between "chronic diffuse nephritis" and "chronic

parenchymatous nephritis," which, as the case then stood, was regarded as impossible. Dr. Delafield, however, was inclined to regard the case as one of diffuse nephritis, because "the small number of casts in proportion to the albumen would rather point in this direction. When parenchymatous nephritis has lasted for some time, the proportion is rather the other way: the patients have albumen in the urine, but they also have casts, and casts in considerable numbers, and the casts are apt to be a more constant feature than albumen; whereas, with diffuse nephritis, the conditions are the other way: the albumen is apt to be more constant and in larger quantity than the casts." (We believe, however, that the "*architecture*" of the casts is a more reliable guide than that indicated by Dr. Delafield, although that is by no means without value.)

3. "ADDISON'S DISEASE." By THOS. F. ROCHESTER, M.D., Professor, etc., University of Buffalo. (*Buffalo Med. and Surg. Journal*, August, 1880.)

Prof. Rochester relates the history and presents the results of post mortem examination of three cases of morbus Addisonii. In neither case was the morbid anatomy by any means confined to the supra renal capsules; wherefore Prof. Rochester concludes with Martineau, "that the malady of Addison should not be considered as a pathological entity," and that "the question of individual pathological identity still remains open." (We believe that this question is no longer an "open" one; exactly *what* Addison's disease is must be regarded as an open question, but it is certainly something more than disease of the supra renal bodies.)

4. "INDICAN IN HEALTH AND DISEASE." By H. N. HEINEMAN, M.D., Assistant to Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York. (*Archives of Medicine*, August, 1880.)

Dr. Heineman presents a very valuable paper on the physiological and pathological relations of indican. In an analysis of 149 cases of normal urine by Hoppe-Seyler and himself, indican was present in 116. In diseased states, indican was found present as follows:

Circulatory system.—Of five cases of cardiac disease three

exhibited a normal amount, two a moderate and marked increase respectively. In one case of aneurism, indican was absent.

Respiratory system.—Of six cases of pleurisy, pneumonia and empyema, two had a normal quantity, two a moderate and two a marked increase. Senator states that in pneumonia and pleurisy he has found a moderate increase.

Of thirteen cases of acute and chronic phthisis two showed marked, three moderate increase, five a normal or slight amount and three absence. Hennige states that the condition of the intestine, whether diarrhœa be present or not, determines the increase in phthisis. Senator, with whom I agree, states with or without diarrhœa there is a moderate or marked increase.

Digestive system.—In three cases of stomach dyspepsia and one of dilatation there was marked increase. In a few cases of ulcer of the stomach, Senator has met with moderate increase. In numerous cases (number not stated) of gastro-duodenitis, Hennige found very marked increase. In one case I have found absence of indican and in three marked increase. In five cases of diarrhœa, there was marked increase in all. Of three cases of dysentery, two exhibited a slight amount and one none; of four cases of chronic constipation, two exhibited absence, two marked increase. Senator, and with him, Hennige, Jaffe, Edlefsen and DeVries, find that in simple constipation from atony, without invagination, only a slight amount of indican is present. The result in two cases met with by me is at variance with this. In one case of intussusception the increase was very marked. In seven cases of peritonitis there was marked increase, and this was greatest in the acute cases, and in those which were general rather than those that were localized. In four cases of intestinal hæmorrhage there was marked increase. In one case of cholera morbus there was marked increase. Senator, Wyss and Gubler have found marked increase in this, and in cases of Asiatic cholera.

Liver.—Of nine cases of cirrhosis, two only exhibited a moderate and marked increase respectively, two were normal, and in five there was none.

Genito-urinary system: Kidneys.—Of sixteen cases of Bright's disease, ten presented a marked and four a moderate increase, in two indican was absent.

Senator states that he has found no increase in any except cases of atrophied granular kidney. Heller, Scherer and Virchow had previously reported increase in indican in kidney lesions other than the one just mentioned. My own cases confirm this latter view. Of seven cases of Addison's disease, three had moderate and four marked increase.

Bladder and Urethra.—Of twelve cases in which pus was found in the urine in connection with urethral stricture, cystitis and gonorrhœa, seven gave moderate and one marked increase, three normal or slight amount, and one none.

Uterus and Ovaries.—One case of uterine disease had marked increase; one case of pueperal fever, normal or slight amount; in two cases of ovarian tumor none, and in three cases of pregnancy one had marked and two moderate increase.

Osseous system.—Of nine cases of arthritis, caries and necrosis, four had moderate increase, three normal or slight amount and four none. Of six cases of suppuration and cellulitis unconnected with bone disease, three had moderate increase, two normal amount and one none.

Nervous system.—Indican was absent in one case of apoplexia meningea; markedly increased in one of prog. muscular atrophy, in one case of insanity and epilepsy. In three cases of paraplegia, two had marked increase and one normal amount. In one case of sciatica the quantity was normal. In two cases of cerebral tumor and one of hypochondriasis and nocturnal emissions there was absence. Several authorities claim that spinal irritation is generally accompanied by an increase of indican.

General diseases.—Of five cases of alcoholism two had moderate and one marked increase and two were normal.

Of twenty cases of rheumatism eight of ten of acute disease were normal, one had marked increase and one none. In four of ten chronic cases the quantity was normal or slight, markedly increased in four and moderately in two.

Of nineteen cases of malaria six were normal, five had moderate and one marked increase and seven had none. Of six cases of typhoid fever one had moderate and five marked increase. Hennige has found the increase in typhoid fever dependent upon the presence of diarrhœa. Senator and I have found it independent.

In one case of convalescence from yellow fever the quantity was normal. Of ten cases of constitutional syphilis four had moderate and one marked increase, two were normal, three had none.

Of six cases of chlorosis three had moderate increase and three normal or slight amount. There was a normal or slight quantity in two cases of Werlhof's disease, marked increase in one case of progressive pernicious anæmia and absence in one case of leucocythæmia. In three cases of trichinosis and two of lead, poisoning there was marked increase. In one of chronic arsenical poisoning, absence.

In twenty-one cases of carcinoma interna there was very marked increase in nineteen and absence in two.

In three cases of abdominal lympho-sarcoma and in one case of osteo-sarcoma there was marked increase in all.

Dr. Hineman arrives at the following conclusions:

Conclusions.—Indican is only exceptionally absent in health. It may vary in quantity in the healthy individual, generally being small in amount, but occasionally as marked as in disease.

Certain diseased conditions tend to produce a decided increase.

The most marked increase is obtained in those diseases which affect the alimentary canal, and more especially the small intestine, whether they be local or general diseases with local lesion. Among these are dyspepsia, gastro-duodenitis, chronic constipation, intussusception, diarrhœa, peritonitis, cholera, lead poisoning and typhoid fever.

In diseases causing inanition, as phthisis and other prolonged suppurative diseases, as caries and necrosis, marked increase is found.

Among the diseases producing altered blood state, some, such as malaria, syphilis, rheumatism and alcoholism, progressive anæmia and chlorosis, although *always* causing the most profound blood-changes, *do not always* effect a decided increase. This is a singular exception, to which Senator has called attention, but the investigations are not as yet sufficiently numerous to draw conclusions.

Certain nervous disorders, as insanity, epilepsy, Addison's disease, progressive muscular atrophy and paraplegia, cause marked increase.

Disordered function of the kidneys, as in chronic Bright's disease, caused marked increase.

Internal malignant tumors, as carcinomata and sarcomata, cause increase most markedly and constantly of all.

The explanation of the cause of the increase in various diseases is not as yet adequate to satisfy all cases.

The experiment of Jaffe of ligating the small intestine, by which the amount of indican excreted was increased, demonstrates that conditions retarding peristalsis and favoring the absorption of indol, cause an increase of indican. This reasonably explains the result in cases of peritonitis, constipation and similar disorders.

How, satisfactorily, to account for the result in other diseases must, I regret to state, still remain unanswered.

The theory of Hennige that other diseases act through the nervous system and produce a change in the nature of the pancreatic secretions, and thus cause an increase, is effectually answered by Senator. He calls attention to the fact that indol, the mother substance of indican, is a product of decomposition. Furthermore, Brieger has shown that indol is produced without the presence of pancreatic juices.

Possibly in changes in the circulating fluid, rather than in local disturbances of the system, we may find the reason for the increase in the remaining diseases.

5. "FATAL CASE OF AGUE WITH DELIRIUM AND COMA DURING THE PAROXYSMS DUE TO CIRRHOTIC KIDNEY. By WM. RUSSELL, M.B., ED., late House Physician and Pathologist to the General Hospital, Wolverhampton. (*Edinburgh Medical Journal*, August, 1880.)

The following case came under my notice when in Perth as *locum tenens* for Dr. Stirling, and is sufficiently interesting and uncommon to warrant a few notes of it being recorded:

Mrs. I., aged sixty-nine, was seen by me on the night of 4th October. She had traveled from Glasgow that day, and was supposed to be in fair health when she left; she had, however, been under treatment for what was belived to be a hysterical condition. Since her death I have received particulars of the case

from her Glasgow medical attendant. She had returned from America some three weeks before I saw her, and on the passage home had shown strange mental symptoms. During the first week or two of her stay in Glasgow she was said to have a regular nocturnal "shivering fit," after which she used to wander about in her night-gown. Some time after this she was seen by her medical attendant in one of her "shivering fits," the seizures at this time taking place in the forenoon instead of during the night, when he found her pulse quiet, her surface temperature feeling normal, and, when interested in conversation, that the shivering ceased. He considered the possibility of the case being ague, but was satisfied to the contrary. The urine was examined, and contained no albumen.

When I saw her, she complained of pain and confusion in her head, of frequent defecation, and of only passing a few scybala at a time. She was restless, had a dreamy and somewhat wearied expression, answered questions rationally, but did not recognize the friend she traveled to Perth to see. I ordered some bromide of potassium, and she passed a comfortable night. On the morning of the 5th she seemed much better and more collected, and the bowels had been freely moved by castor oil. In the morning I was summoned to see her, and found her tossing about in bed, occasionally groaning and moaning loud enough to be heard in the houses on the opposite side of the street. She was quite unconscious, and passed urine and fæces into the bed. The pupils responded to light. Her pulse was beating from 130 to 140, the heart's action being very tumultuous and thumping; the temperature in the axilla was 105°. Large doses of chloral hydrate and bromide of potassium quieted her. In the evening Dr. Bramwell kindly saw her in consultation with me. By that time her temperature had fallen to 102°, and the pulse to about 100, and she was regaining consciousness. From the existence of subcrepitant râles all over the left chest, it was suggested she had been knocked down by pneumonia, especially as we ascertained she had had a "shivering fit" during the afternoon. She was put on 5 grs. of quinine every six hours. On the morning of the 6th she seemed quite well again, her temperature being normal, and her pulse 84. During the day Dr. Bramwell saw her with me, when

we congratulated ourselves and her on the marked improvement in her condition. In the evening I was again called to see her, and found her exhibiting the same train of nervous symptoms as on the previous evening. This annihilated our pneumonia theory. The temperature was 103°.5, and the pulse about 130. On investigation I found she had had another rigor, that with the onset of the rigor she became restless, and from that time the nervous symptoms had increased until she became unconscious, tossing about and moaning loudly from time to time. The initial symptoms so resembled ague that I examined the spleen and found it greatly enlarged. This new light on a case that had hitherto been obscure was satisfactory; but I was not satisfied that this was sufficient to explain the extreme severity of the cerebral symptoms, which seemed as out of keeping with an ague, with a temperature of only about 104°, as I believed them to be inexplicable by a pneumonia in a person of her years. I purposed to examine the urine when she became conscious, as I had no doubt she would the following morning. The coma, however, deepened, and she died that night.

By the kind influence of her Glasgow medical attendant the friends gave permission for a post-mortem examination. Dr. Gillespie, house surgeon to the Perth Infirmary, kindly assisted me. The *dura mater* was adherent to the calvarium, and had to be removed with it. The *brain* was hyperæmic, as shown by the size and number of the *puncta cruenta*, but was otherwise normal. The *heart* was large and fatty. The *left lung* was bound by old adhesions, and both it and its fellow were œdematous, but neither presented a trace of pneumonia. The *spleen* was much enlarged, measuring about 6 in. by 4 in., dark and pulpy. The *liver* was normal. The *kidneys* were small and markedly cirrhotic, no part of their capsules stripping off without lacerating their substance.

Although we tolerably frequently have the opportunity of seeing cases of ague in this country, the above case was at first peculiarly difficult, from the meagre and misleading history we possessed at the time; but the point of real interest in the case was the prominence and severity of the nervous symptoms, which at first gave one the idea of being due to active cerebral mischief,

and was only given up when the first lull came; then the possibility of their being due to acute pneumonia was contemplated; and, at last, when the true nature of the seizures was evident, and with the light of the autopsy, we see the important *rôle* played by the state of the kidneys in producing cerebral irritation, manifested by restlessness and delirium during the course of the ague paroxysm, and afterwads a coma, which was ultimately fatal. I have seen patients suffering from other diseases in which a cirrhotic condition of kidney intensified the cerebral symptoms, and it is a complication I have come to regard tentatively as explaining the severity of the nervous symptoms in many cases in which we are apt to give the more prominent disease the onus of their severity, when in reality the more evident affection is quite insufficient to explain such intensity.

The relation between this case and what is described as malignant or pernicious ague is of some interest; for, even in the East, malignant ague seems to be very uncommon, and, when it does occur, kills early, presumably by the intensity of the poison, so that I should be inclined to question the possibility of our seeing such cases at home.

While we have no doubt that the pathological conditions of the kidneys plays an important part in the causation of the symptoms present in Mr. Black's case, it seems to us by no means certain that the "delirium and coma" are wholly due to "cirrhotic kidney," for the reason that the post mortem revealed quite too many other and important pathological lesions.

I. N. D.

GLYCERINE IN FLATULENCE, ACIDITY, AND PYROSIS. SIDNEY RINGER, M.D., and WILLIAM MURRELL write to the *Lancet* as follows :—

An old gentleman, who for many years suffered from distressing acidity, read in a daily paper that glycerine added to milk prevents its souring, and he reasoned thus: "If glycerine prevents milk turning sour, why should it not prevent me turning sour?" and he resolved to try the efficacy of glycerine for his acidity. The success of his experiment was complete, and whenever tormented by his old malady he cures himself by a recourse

to glycerine. Indeed he can now take articles of food from which he was previously compelled to abstain, provided always that he takes a drachm of glycerine immediately before, with, or directly after his food. He recommends this treatment to many of his friends (sufferers like himself,) and one of these mentioned the above circumstances to us.

We have since largely employed glycerine, and find it not only very useful in acidity, but also in flatulence and pyrosis, and that it sometimes relieves pain. We meet with cases where flatulence, or acidity, or pyrosis is the only symptom, but more frequently these symptoms are combined. Some patients rift up huge quantities of wind without any other symptoms than depression of spirits; in others we get flatulence and acidity, one or other predominating; and we meet with others who suffer from acidity, flatulence, and also pyrosis. In all these various forms we find glycerine useful, and in the great majority of cases very useful. We do not mean to say that in all cases it is superior to other remedies for these complaints; indeed in several instances it has only partially succeeded, where other remedies at once cured. On the other hand, in some cases glycerine speedily and completely succeeded, where the commonly-used remedies for acidity and flatulence completely failed. We do not pretend to estimate its relative value to other remedies; we are only anxious to draw attention to its virtues. Gas is in some instances formed in the stomach, in others in the large intestine, in some patients in both. Our observations were made on stomach flatulence, and as glycerine is so readily absorbed we should hardly expect that it would influence the formation of wind in the colon, except given in large doses, and when it acts as a slight laxative, and so expels the putrefying mass which forms the wind. In some cases it removes pain and vomiting, probably like charcoal, by preventing the formation of acrid acids, which irritate delicate and irritable stomachs.

We suggest that it acts by retarding or preventing some forms of fermentation and putrefaction. J. Mèkulics (*Archiv. f. Klin. Chir.*) shows that glycerine prevents putrefaction of nitrogenous substances, as of blood diluted with water, which speedily decomposes at the ordinary temperature of the air. Two per cent. of

glycerine retarded decomposition for twenty-four hours; ten per cent. for five days. If the fluid were placed in the hatching oven, then two per cent. retarded decomposition for several hours, ten per cent. for forty-eight hours, and twenty per cent altogether prevented putrefaction. He also proves that glycerine destroys bacteria, and prevents the formation of septic poison, though it will dissolve and preserve the septic poison itself.

Dr. E. Murk (*Virchow's Archiv.*) finds that two to three per cent. will delay lactic fermentation in milk eighteen to twenty-four hours. Burnham Wilmot, 1860, says glycerine preserves meat so that after several months' immersion the meat is sweet and can be eaten; and Demarquay proves that both animal and vegetable substances may be kept for six weeks to two months by glycerine.

Glycerine, however, does not prevent the digestive action of pepsin and hydrochloric acid; hence, while it prevents the formation of wind and acidity, probably by checking fermentation, in no way hinders digestion. We administer a drachm or two drachms either before, with, or immediately after food. It may be given in water, coffee, tea, or lemon and soda-water. In tea and coffee it may replace sugar, a substance which greatly favors flatulence, as indeed does tea in many cases. In some instances a cure does not occur till the lapse of ten days or a fortnight. —*Canada Medical and Surgical Journal.*

TREATMENT OF LEUCORRHŒA IN LITTLE GIRLS. (*Bouchut, Paris Méd and Le Pratician*, No. 17, p. 202.)

The author denies that the leucorrhœa is produced by vaginitis or metritis, but is always the result of vulvitis, and it is the latter that should be treated. He therefore rejects vaginal injections which are difficult to make in little girls, as well as repugnant to the mothers, and simply treats the vulva.

The treatment is both local and general.

Locally.—Extreme cleanliness of the diseased parts, obtained by means of repeated lotions with bran water of walnut leaves, Goulard's water, etc. 2nd, *modify the diseased surfaces.* For this purpose the means are numerous, corrosive sublimate (10 centigr. to 300) in sitz baths or lotions; carbolic acid, 5 to 1000;

coal tar diluted one-half and finally cauterization with a solution of nitrate of silver (20 centigr. to 30 grams) are useful. Between the lotions it is well to apply a pledget of lint saturated with coal tar or an ointment of red precipitate between the labia. This, kept in place by a pad, protects the labia and surrounding parts from irritation from the pus which is often very abundant.

Internally the author recommends for strumous patients cod-liver oil and quinine, and for herpetic patients arsenic. The disease is often rebellious to treatment.

FROM A PAPER ON THE CONTAGION OF CONSUMPTION. By JAMES T. WHITTAKER, M.D.

The whole question of the contagion of consumption, *i. e.* of the specificity of the tuberculous virus, hinges upon its inoculability, and of this capability there is now scarcely room for doubt. Harnsell (Graefe's *Archiv.*, 25, part iv, 1879) mentions cases of tuberculosis iridis, as reported by Perls, Manfredi, Koester, Leber, Samelsohn, Sattler and Angelucci, and adds three cases from his own (Göttingen) clinic. He thus establishes the fact of infection of the iris. After mentioning the experiments of others in direct and indirect inoculation of the eye with tuberculous matter, the author then proceeds to detail his own. He found that the insertion of tuberculous matter into the anterior chamber of the eye invariably inoculated the iris. The cornea and conjunctiva, moreover, could be inoculated directly, and in all cases the tuberculous matter inserted "disappeared by the third day, and after from fifteen to twenty-three days of incubation tuberculous collections showed themselves."

The fact that these collections or masses were tubercular was proven after the method of the chemists in recognition of the action of a poison, that is, by insertion into the bodies of other animals. Particles or portions were put into the abdominal cavities of dogs and guinea-pigs. The dogs died of suppurative peritonitis. The guinea-pigs were kept under observation for three months and then killed, when "all the internal organs and the skin were found, without exception, to be filled with deposits of miliary tubercles." Cohnheim tried in vain to excite tubercles in the iris "by introducing into the anterior chamber portions of

non-tuberculous animal tissues, of the most varied kind," and Harnsell failed to inoculate tuberculosis with fresh trachomatous matter. "On the other hand, the tuberculous matter used, when introduced into the peritoneal cavity, excited, in turn, general tuberculosis of all the organs."

"*So in Tuberculosis,*" as Cohnheim concludes, "*everything depends upon the virus. We discover at all points the closest analogies between tuberculosis and syphilis. Both require, above all things, infection, transmissibility of the disease from person to person.*"

This comparison between tuberculosis and syphilis is exceedingly happy. The conduct of no other infectious disease so closely resembles that of tuberculosis, or so completely clears up the perplexities which beset the disease. To compare tuberculosis with small-pox, for instance, would be fatal to our understanding of either, while tuberculosis and syphilis present so many analogies as to have even led some pathologists to regard one as a form or a product of the other, a conception which is, of course, radically wrong.

Tuberculosis, like syphilis, depends then upon a specific virus which must reach a mucous membrane or a broken surface, to be absorbed and induce the disease. Laennec was convinced that he had inoculated himself once with tuberculosis, just as many an unfortunate practitioner has since inoculated himself with syphilis, by a wound from a saw in making a post-mortem examination upon a phthisical patient. But more fortunate than they, he succeeded in destroying the tuberculous nodule at the start with the butter of antimony.

Syphilis, for the most part, reaches the body through the organs of generation, while tuberculosis is breathed, for the most part, into the lungs, or is swallowed with food, as with milk, the most frequent cause of tuberculosis in childhood.

The first symptoms of each affection are local; in syphilis, at the genital organs, in tuberculosis, at the lungs or in the intestinal canal. From the point of absorption the disease next invades the lymph glands in the nearest vicinity; in syphilis, the glands in the groin, in tuberculosis, the bronchial and mesenteric glands. Passing these glands, or being absorbed into the blood, both diseases become general.

Both diseases may be transmitted by heredity, and both diseases, thus transmitted, may lie latent for a time, for a longer time in tuberculosis, to develop at a later period. During the latent stages, both diseases impair the processes of nutrition, and deform the development of the body. The victim of latent syphilis has notched teeth, falling hair, derangements of digestion, etc. The victim of tuberculosis shows the aspect of scrofula, or has the sunken, elongated chest, ossified ribs, the thorax paralytica; he has also clubbed fingers, and the other well known signs which constitute the *phthisical habitus*. This habitus is therefore an effect and not an inviting cause of the disease. An individual thus affected is said to have the tuberculous diathesis, just as an individual once syphilized has the syphilitic diathesis. Either disease may manifest itself in its well known symptoms at any time. But latent or manifest, the disease is present, just the same, all the time.

There is, then, no such thing as a predisposition to either disease. Either a man has syphilis or he has it not. Either a man has tuberculosis or he has it not. One man is not more predisposed to either disease than another. Syphilis affects one individual more than another, because its virus finds a better lodgment upon his mucous membranes. Tuberculosis finds also, fortuitously, a better nidus in one case than another. The virus of tuberculosis is lodged in one case and not coughed up, just as in syphilis the virus is secreted and not washed off.

Both diseases may disappear from the body entirely, and a perfect cure may result, but it is impossible to state when such complete eradication has taken place. In syphilis the capability of reinoculation furnishes the only definite information in this regard, a method of trial not so likely to be undertaken in tuberculosis. As a rule, however, neither disease does disappear from the body entirely. What Fournier said of syphilis is true also of tuberculosis, viz., that the diathesis is a period of health interrupted by explosions of the disease. Cazenave said long ago that one does not recover from the syphilitic diathesis, but lives with it as with the lymphatic temperament, and an older writer observed that syphilis strikes with its victims "a truce oftener than a peace."

Both diseases may, and for the most part do leave in the body centers of future infection. From any chancre, plaque, gumma, or other deposit of syphilis, reabsorption may take place at any time, and reinfection with syphilis, or, better, reappearance of external signs. So, from any caseous nodule wherein the tuberculous virus is locked up in temporary innocence, absorption may take place under favoring circumstances and a new outbreak of tuberculous symptoms appear, the quantity of virus thus set free, determining to great extent, perhaps, the virulence of the symptoms. While the virus is thus locked up the disease is latent, when set free, it is manifest.

While it is true, therefore, of both diseases that they may be inherited, that is, that both syphilis and tuberculosis may affect the ova and spermatozoids as well as every other organ and tissue of the body, it is also true of both diseases that they are in the vast majority of cases not inherited, but acquired. A thorough sifting of the cases will show this statement to be as notoriously true of tuberculosis as of syphilis. So soon as the inoculability of tuberculosis is established, the fact is also established that the disease is acquired oftener than inherited.

With the general recognition of these views, we shall cease to hear of bad air and bad sanitation as direct factors in the disease. The writer of this article once went so far as to develop tuberculosis from depressing mental emotions. Bad air, food or drink, are productive of tuberculosis only when they contain the virus of the disease. In other respects they are no worse for tuberculosis than for any other disease. Drinking water contaminated with sewage does not produce typhoid fever unless the sewage contain the typhoid germ. So, contaminated air is productive of tuberculosis only when a cause of its contamination is tuberculous virus. Drs. Cotton and Edwards, of the Brompton Hospital for Consumptives, object to the contagiousness of consumption on the ground that but one nurse and one servant died of phthisis in that institution in a period of twenty-one years. Dr. Cotton went so far as to say that "a residence in the consumptive hospital and long continued working in its wards is a very good way, indeed, *not to catch the disease.*" It must be remembered, however, that few institutions were in such perfect

sanitation, especially as regards ventilation, as Brompton Hospital. Anyhow, the statement does not count for much less than to show how close an association is necessary to contract the disease. For the same observation has been made with reference to typoid fever, an infectious disease beyond a doubt. Liebermeister states that up to the year 1865 he had never seee in the hospitals which he visited (Greifswald, Berlin, Tübingen) "a single hospital patient, physician or nurse, attacked with typhoid fever, although such cases are placed in the general wards." And the same author quotes from Murchison to the effect that "during a period of fourteen and a half years in the London Fever Hospital, 2,506 patients were treated with typhoid fever, and during that time only eight cases originated in the hospital."

The specificity of the tuberculosis virus is determined in a higher school, and by means more in accord with the principles of science than clinical observation. And the recognition of it clears the field for prophylaxis and opens up a new and more promising outlook for the therapy of the disease.

Dr. Stuart Eldridge, Gen. Hospital, Yokohama, Japan, calls the attention of the profession to the great advantages of Asbestos roofing felt as a material for plastic splints and other molded apparatus. In a brief statement he gives the qualities in which it excels those now in vogue. 1. It is rendered perfectly soft and flexible by brief immersion in water of a temperature easily borne by the hand. 2. It retains its plasticity long enough to allow of careful adaptation, while its stiffness is instantly restored by a dash of cold water. 3. While soft it does not change dimensions, so often the case with gutta percha. 4. It remains unchanged after indefinite exposure to the heat and moisture of the body, nor is it affected by any of the ordinary lotions applied in cases of wound or fracture. 5. It is perfectly antiseptic on account of the coal tar with which it is saturated, a quality which would of itself commend its use in compound fracture. 6. It is so cheap that its cost is hardly worth mentioning even in large institutions.—*N. Y. Med. Record.*

Obituary.

DIED, at 9:30 a.m. of August 17th, 1880, at his residence, 291 Huron Street, Chicago, FRANK HOWARD DAVIS, M.D., aged 32 years, two months and twelve days.

The deceased was born in the city of New York, June 5, 1848, was taken by his parents, Nathan S. and Anna Maria Davis, to Chicago in September, 1849, where he lived until his death. He received the earlier part of his education in the select schools of this city, and entered the University of Michigan with the intention of completing a full classical course of study. But frequent interruptions from ill health finally caused him to relinquish this course at the end of the sophomore year, and to turn his attention to ordinary business pursuits. In a few months, however, he returned to the office of his father and commenced a dilligent study of medicine in the spring of 1867. In the autumn of the same year he matriculated in the Chicago Medical College, and faithfully pursued the systematic graded course of that institution until near the close of his second college year, when, on account of some threatening pulmonary symptoms, he went to Europe, where he remained sixteen months. While absent he continued to devote a part of his time to the study of medicine, a part to the acquisition of a more practical knowledge of the German and French languages, and the rest to general science and observation. On his return home he immediately resumed his regular course of study in the Chicago Medical College and Mercy Hospital, and graduated at the end of his third college year, in March, 1871; receiving the prize for the best thesis presented to the faculty by the class of that year. Immediately after graduation he again visited Europe, accompanied by his

younger brother, and spent a few months in the hospitals of Vienna, giving more special attention to the diagnosis and treatment of diseases of the air passages. Returning home the latter part of July of the same year, he entered at once upon the general practice of his profession in this city. Invigorated by his two trips to Europe, he was enabled to pursue the practice of his profession, uninterruptedly and with a gratifying degree of success, until June 3, 1880, when he was suddenly arrested by the sickness that ended in his death at the date already given. During this brief professional career of only nine years, he had not only laid the foundation for a lucrative practice and attached to himself the fullest confidence and affection of a wide circle of friends, but he had also equally won the respect and esteem of the members of his own profession. As proof of the latter, and also as an indication of his activity in the promotion of both the social and scientific interests of the profession it may not be inappropriate to mention that he was an active member of the American Medical Association; the Illinois State Medical Society; the Alumni Association of the Chicago Medical College; the Chicago Medical Society; the American Laryngological Association, and the Association of American Medical Editors, to the transactions of all of which he contributed papers of more or less value, and in the three last of which he held official positions. He was also an active member of the medical staffs of the Mercy Hospital and of the South Side Free Dispensary. Soon after entering the profession he became associated with his father as editor of the CHICAGO MEDICAL EXAMINER, which position he continued to hold until that periodical was transferred to the Chicago Medical Press Association, and united with the CHICAGO MEDICAL JOURNAL. Yet in the midst of all his professional engagements he found time to cultivate the broader domain of general science, and early became an active member of the Chicago Academy of Sciences, of which he was Librarian at the time of his death. If we turn for a moment from his professional career to his private and domestic character, we shall find in it nothing but comfort and consolation to the sorrowing ones he has left behind him. Naturally timid, sensitive and affectionate, he early imbibed a pro-

found respect for the precepts and doctrines of the Christian religion, and after arriving at mature years, became an acceptable member of the Methodist Episcopal Church; and though some portions of his last illness were accompanied by the most intense bodily suffering, yet no word of murmuring against Providence escaped his lips. For three weeks before his death he became fully conscious of the probable fatal result and expressed his readiness to go, with the utmost confidence in his future welfare. On the 13th of April, 1875, he was united in marriage to Miss Anna Smith Marcy, the accomplished daughter of Prof. Oliver Marcy, of Evanston, the acting president of the Northwestern University, and entered at once upon the enjoyment of that domestic happiness which can be found only in a home of virtue, intelligence and affection. In due time two children, a son and daughter, were added to the family circle, and, with the mother, are now left to mourn their great loss. The chief cause of death, as shown by a post mortem examination, was an acute pyæmic or suppurative inflammation of the left kidney, accompanied by so persistent a reflex irritation of the stomach, that during the last three weeks of life, his sole dependence for support was on nutritive enemas. The deceased was an industrious student; a careful and accurate investigator; a ready writer; with a rare mechanical genius and fine appreciation of art. The latter qualities were displayed in the devising and modifying of instruments for his own use in the favorite department of his profession, and in the modelling of a very accurate life size bust of his father.

TO REMOVE PLASTER OF PARIS FROM THE HANDS.—Dr. Wilcox, surgeon, U. S. A., says that a little bicarbonate of soda or potassa, added to the water in which the hands are washed, after applying plaster of Paris bandages, immediately removes the unpleasant feeling left by the plaster.—*Toledo Med. and Surg. Journal.*

ANNOUNCEMENTS FOR THE MONTH.

SOCIETY MEETINGS.

Chicago Medical Society—Mondays, Sept. 6 and 20.
West Chicago Medical Society—Mondays, Sept. 13 and 27.
Biological Society—Wednesday, Sept. 1.

CLINICS.

MONDAY.

Eye and Ear Infirmary—2 p. m., Ophthalmological, by Prof. Holmes; 3 p. m., Otological, by Prof. Jones.
Mercy Hospital—2 p. m., Surgical, by Prof. Andrews.
Rush Medical College—2 p. m., Dermatological and Venereal, by Prof. Hyde; 3 p. m., Medical, by Dr. Bridge.
Woman's Medical College—2 p. m., Dermatological and Venereal, by Prof. Maynard; 3 p. m., Diseases of the Chest, Prof. Ingals.

TUESDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics.
Mercy Hospital—2 p. m., Medical, by Prof. Quine.

WEDNESDAY.

Chicago Medical College—2 p. m., Eye and Ear, by Prof. Jones.
Rush Medical College—3:30 to 4:30 p. m., Diseases of the Chest, by Dr. E. Fletcher Ingals.

THURSDAY.

Chicago Medical College—2 p. m., Gynæcological, by Prof. Jenks.
Rush Medical College—3 p. m., Diseases of the Nervous System, by Prof. Lyman.
Eye and Ear Infirmary—2 p. m., Ophthalmological, by Dr. Hotz.
Woman's Medical College—3 p. m., Surgical, by Prof. Owens.

FRIDAY.

Cook County Hospital—2 to 4 p. m., Medical and Surgical Clinics.
Mercy Hospital—2 p. m., Medical, by Prof. Davis.

SATURDAY.

Rush Medical College—2 p. m., Surgical, by Prof. Gunn.
Chicago Medical College—2 p. m., Surgical, by Prof. Isham; 3 p. m., Neurological, by Prof. Jewell.
Woman's Medical College—11 a. m., Ophthalmological, by Prof. Montgomery; 2 p. m., Gynæcological, by Prof. Fitch.

Daily Clinics, from 2 to 4 p. m., at the Central Free Dispensary, and at the South Side Dispensary.